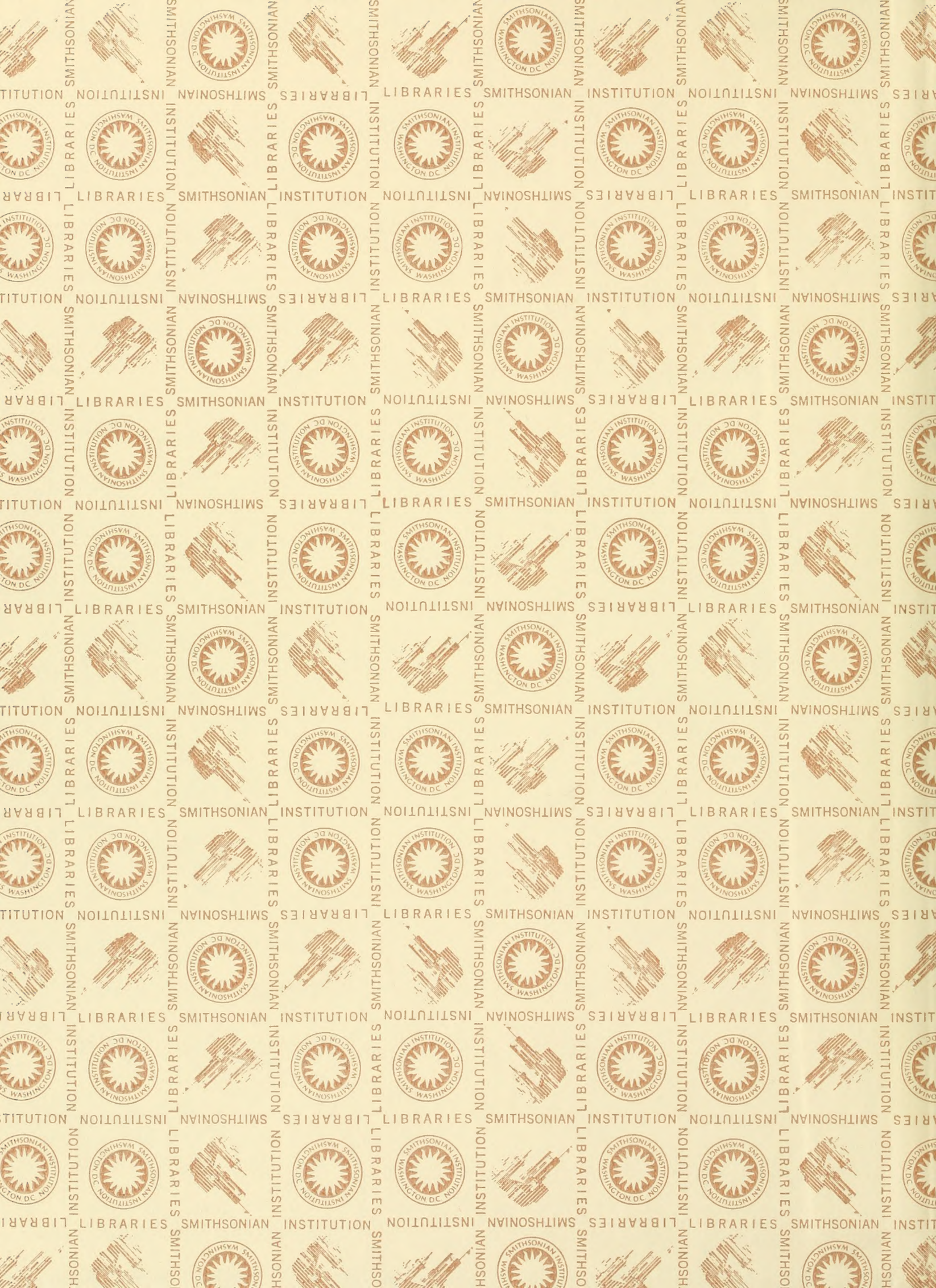
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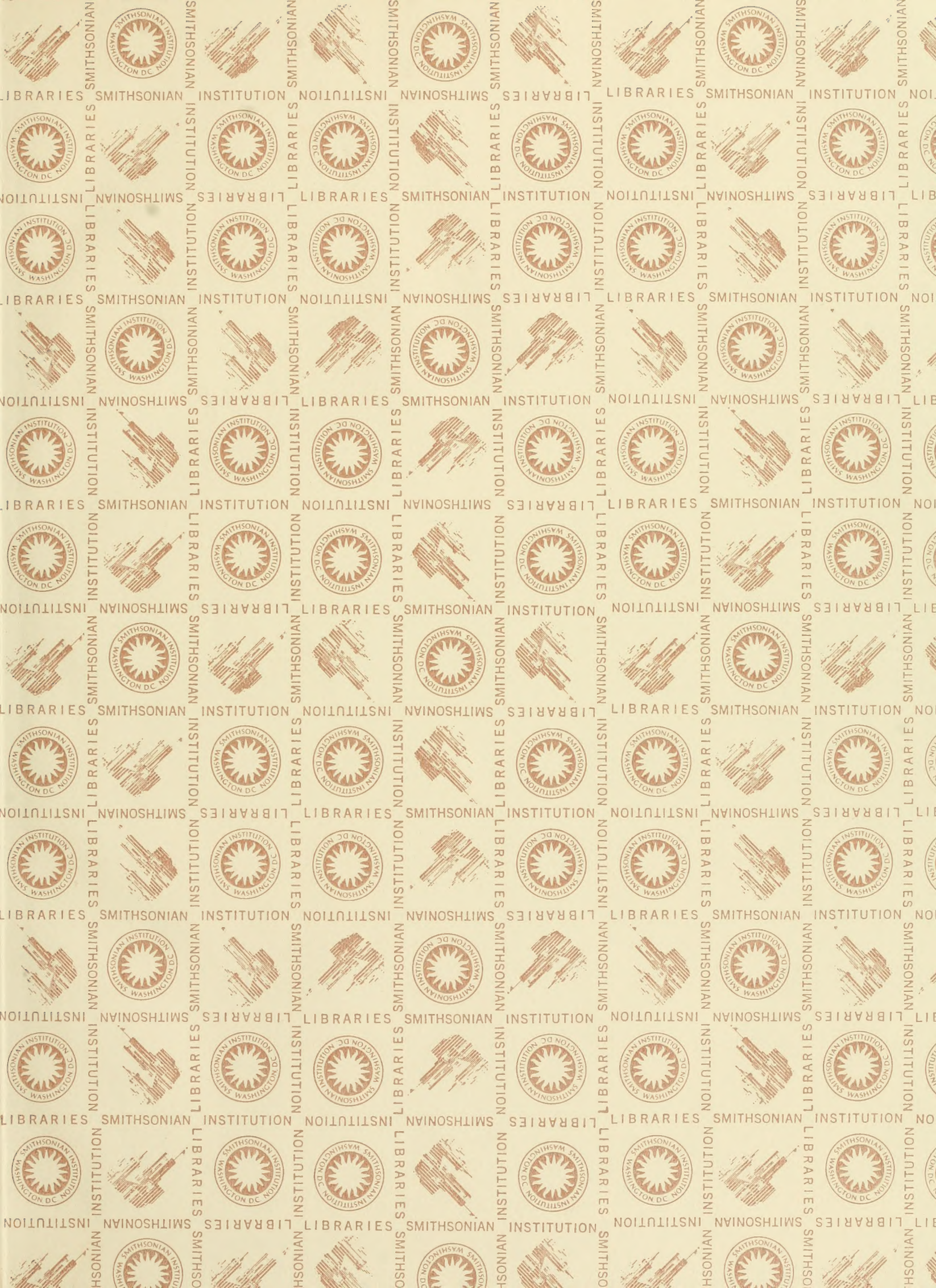
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INSECTA TRANSVAALIENSIA:

A CONTRIBUTION TO A KNOWLEDGE OF THE

ENTOMOLOGY OF SOUTH AFRICA.

BY

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AUTHOR OF 'RHOPALOCERA MALAYANA'; 'A MONOGRAPH OF ORIENTAL CICADIDÆ' "HEMIPTERA-HETEROPTERA," VOL. I. IN 'BIOLOGIA CENTRALI-AMERICANA'; 'A NATURALIST IN THE TRANSVAAL,' ETC.,

ASSISTED BY MANY SPECIALISTS.

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Order LEPIDOPTERA.

Suborder HETEROCERA.

In describing the Heterocera, or Moths, no special classification will be here followed, beyond treating the different families separate and complete. This is the more necessary as the heteroceral taxonomy is now being much studied, and its treatment receiving somewhat diverse suggestions from the pens of different lepidopterists. Of course the latest classificatory propositions are to be found in Sir G. Hampson's colossal publication now appearing in almost annual volumes,* and which must, from its universal treatment, become a standard authority. Besides this reason, another exists for the treatment of separate and not always closely allied families, in the accessibility of sufficient material to render the sections moderately complete. We now enumerate genera and species of some families which from their larger size and prominent appearance have been most frequently observed and more thoroughly collected. The more obscure and smaller Moths will be dealt with subsequently, a course warranted by the additions now being made to our knowledge by quite a number of good and energetic friends and collectors in the Transvaal.

We have first to deal with a phalanx of large African Moths which have been usually included in one family—Saturniidæ; but their life-histories being now better recorded, they are seen to fall into two very distinct divisions or subfamilies. The principal character that divides them is to be found in the method of their transformations, one section spinning a cocoon, the other section pupating beneath the surface of the ground. Other divisional characters are also to be found in the perfect insects, but the pupal arrangements are here considered fundamental. It may be well to review the work of different entomologists who have enabled us by a study of their propositions to more or less adopt their views, and to arrive at what seems a fairly natural arrangement.

The first concise information, or at all events the first published facts with which I am acquainted, relative to the pupation of many of these Moths are attached to the name of the late Philip Crowley, who, in answer to inquiries, received the following information from a Natal correspondent:—"The larvæ of all our big Moths burrow into the soil to a depth of two or three inches, and there they remain, some for six months, some for ten. The way in which I manage is this: first I search in due season for the caterpillars, which, having found, I remove to bushes and trees as near my residence as possible. I then watch them carefully day by day, until I consider them large enough to remove into my breeding-cages, all of which have at least six inches of good soil at the bottom. When full-fed they burrow, as I have said before, and exactly six weeks after the disappearance of the last one, I dig up all the pupæ and lay them carefully side by side upon moss, which is from time to time moistened." Mr. Crowley said he had received from this source the following pupæ, which,

* 'Catalogue of the Lepidoptera Phalænæ in the British Museum,' vols. i.–iii. published.

as a rule, hatched out well, and by their general appearance bore out the statement of his correspondent. The species were *Gynanisa maia*, *Bunæa alcinoe*, *Angelica tyrrhea*, *Melanocera menippe*, *Nudaurelia wahlbergi*, and *Cirina forda*.*

American entomologists are the most advanced students in the taxonomy of these Moths. According to Mr. John B. Smith,† the family Saturniidæ, as limited by him, is sharply separated from all the other Lepidoptera by the structure of the antennæ. These organs are always pectinated in the males, and usually also in the females. The branches or pectinations are arranged on each side of the middle of the joints, and these are, in the males always and the females usually, two on each side, or four branches to each antennal joint—a character found in only one other family, the Ceratocampidæ. The latter family is sharply separated from the present by having the pectinations extending only half the length of the antennæ, while here they extend to the tip. In life-habits they are also very distinct, for while the Saturniid larvæ are all spinners and make more or less perfect cocoons, the Ceratocampid larvæ all go under ground to pupate. He proposed the following divisional characters :—

Pectinations of antennæ extending to the tip	Saturniidæ.
Discal cell of both wings open	Subfam. Attacinæ.
Discal cell of both wings closed	Subfam. Saturniinæ.
Pectinations of antennæ extending to the middle only, simple or serrate beyond	Ceratocampidæ.

Dr. A. S. Packard, who has given much study to the problem, considers that "the larval characters of this interesting group, especially those features which are congenital, tend to show that the family has originated from some spiny group, and most probably, when we take into account the transformations of *Aglia tau*,‡ from the Ceratocampidæ, although none of the latter spin a cocoon. During the evolution of the group they underwent a change in shape, from a rather long and slender form to a thick heavy body, with a thin integument, the result perhaps of an unusually stationary mode of life. The imagines also underwent a process of degeneration, as seen in the atrophy, total or partial, of the maxillæ, and in the loss of veins in their very large but weak wings; though the loss of strength of flight is somewhat compensated for by the remarkable development of the olfactory organs, or antennæ. . . . It seems probable that the type was a Miocene Tertiary one, which has lingered on in Eastern America (North and South), and in Eastern Asia, as well as in Africa, while it has become nearly extinct on the Pacific shores of North and South America, and in Europe." § Packard subsequently separated—so far as he possessed information—the genera of the spinning and subterraneous pupating Moths.‖ He also proposed the name Sphingicampidæ for the last-mentioned Moths, "whose larvæ are so sphinx-like in general shape, in the form of the anal legs, head, and other features, besides the pupa and subterranean habits.

Mr. A. R. Grote, under the title of *Die Saturniiden*,¶ entered very fully into a proposed

* Proc. Zool. Soc. Lond. 1886, pp. 296–7; *cf.* also Wailly, 'Entomologist,' xxix. p. 354 (1896).

† "A Revision of the Lepid. Fam. Saturniidæ," Proc. U.S. Nat. Mus. 1886, p. 414.

‡ A Palæarctic species.

§ "Studies on the Transformations of Moths of the Family Saturniidæ" (Proc. Am. Ac. Arts and Science (n. s.), xx. p. 55, 1893).

‖ *Cf.* "On the Larval Forms of several Exotic Ceratocampid Moths" ('Psyche,' vol. ix. p. 279 (1901)); and "On the Limits of the Family Saturniidæ," &c., *loc. cit.* p. 321 (1902).

¶ 'Mittheilungen aus dem Roemer Museum zu Hildesheim,' No. 6 (1896).

classification of this group of Moths, and since, in response to some comment of Dr. Dyar,* has again reaffirmed his views on the subject, with a concise synopsis expressing the same, as follows † :—

Radius 5-branched	**SPHINGIDES.**
Radius 3–4-branched	**SATURNIIDES.**
(1). Vein IV_2 anastomosing with IV_1	**Saturniidæ.**
Cell open	*Attacinæ* 1.
Cell closed.	
Hind wings wanting vein VIII	*Saturniinæ* 2.
Hind wings with VIII present	*Hemileucinæ* 3.
(2). Vein IV_2 from the cross-vein	**Agliidæ.**
Cell apically depressed.	
Hind wings wanting vein VIII	*Agliinæ* 4.
Hind wings with vein VIII present	*Citheroniinæ* 6.
Cell rectangular	*Automerinæ* 5.

The principal publications on the Saturniidæ which to any extent include the South African species are as follows :—

Westwood, J. O. "Monograph of the large African species of Nocturnal Lepidoptera belonging or allied to the genus *Saturnia*." (Proc. Zool. Soc. Lond. 1849, pp. 33–61, plates vii.–x.)

Wallengren, H. D. J. "Heterocer-Fjärilar Kafferlandet." (Kongl. Svensk. Vet.-Ak. Handl. Bd. v. No. 4, pp. 24–8 (1865).)

Maassen und Weymer. 'Beiträge zur Schmetterlingskunde,' Lief. i.–v. (all published) (1869–85).

Kirby, W. F. "Notes on the African Saturniidæ in the Collection of the Royal Dublin Society." (Trans. Ent. Soc. Lond. 1877, pp. 15–21.)

Rothschild, W., Hon. "Notes on Saturniidæ; with a preliminary revision of the Family down to the Genus *Automeris*, and descriptions of some new species." ('Novitates Zoologicæ,' vol. ii. pp. 35–51, 1895.)

Wailly, Alfred. "Silk-producing Lepidoptera—African Species." ('Entomologist,' xxix. p. 352 (1896).)

Distant, W. L. "On a Collection of Heterocera made in the Transvaal. Fam. Saturniidæ." (Ann. Mag. Nat. Hist. Ser. 6, vol. xix. pp. 390–4 (1897).)

Sonthonnax, M. L. "Essai de Classification des Lépidoptères producteurs de Soie." (Compte rend. des Travaux du Laboratoire d'Études de la Soie, 1895–1900).)

Other writers and describers will be referred to in the nomenclature of the genera and species, and in notes.

Fam. SATURNIIDÆ.

Saturniidæ, Hampson, Fauna of Brit. India, Moths, vol. i. p. 12 (1892).

Hampson thus diagnoses this family on Oriental representatives :—"*Proboscis absent; palpi minute. Antennæ bipectinated in both sexes, the branches long in male, longest at middle and diminishing to base and apex. Legs short, hairy, and without spurs. Fore wing with vein* 1*b forked at base;* 1*c absent; the discocellulars (when present) emitted from vein* 5*, which is stalked with* 6*; veins* 10 *and* 11 *absent. Hind wing without a frenulum; a precostal vein slightly developed; the discocellulars emitted from vein* 5*, which is stalked with* 6*; one internal vein.* Larvæ *smooth, with spiniferous tubercles, dorsal humps, long fleshy spinous processes, or small warts, and forming cocoons, those produced by several of the species giving the Tussur silks of commerce.*"

Taking this as a general diagnosis, we propose, from the different methods of transformations in the African species, to further divide the family as follows :—

A. *Larvæ spinning and constructing a perfect cocoon*	Subfam. **Saturniinæ.**
B. *Larvæ pupating subterraneously, in the chrysalis condition*	Subfam. **Sphingicampinæ.**

* 'Canadian Entomologist,' xxviii. p. 270 (1896).

† Journ. New York Entomol. Soc. v. pp. 44–8 (1897).—J. W. Tutt has also recently discussed the classificatory position of these Moths at great length ('Nat. Hist. Brit. Lepidoptera,' vol. iii. pp. 265–342.

Subfam. SATURNIINÆ.

Three genera alone, as at present known from the Transvaal, can be included in this subfamily, which apparently contains two distinct divisions, which may be called *Saturniinaria* and *Attacinaria*.

These represent the Saturniinæ and Attacinæ of Grote and Packard. Divided by Grote (*ante*, p. 51) on characters found in the imago—cell open or closed; by Packard on larval characters * :—

A. *Six tubercles on the 8th abdominal segment; the tubercles in general over the body all of the same size. Generalized forms* (Saturniinæ).

B. *Five tubercles on the 8th abdominal segment, the median one double; the tubercles in general more or less differentiated or specialized in size and colour. Specialized forms* (Attacinæ).

The method by which these Moths extract themselves from the large and strong cocoons in which they are encased has long been an interesting question which has engaged the attention of generations of entomologists. Mr. F. P. Dodd, in observing the emergence of some Australian species of *Antheræa*, and acting on the information of Dr. A. J. Turner, found that the cutting instrument "is a short hard black and curved thorn, situated in the thick joints at base of fore wings, one on each side; in a rubbed specimen the thorn is easily discernible, but in a good one it is concealed amongst the dense scales." † In 1856 and 1857 Capt. Thos. Hutton described the observations he had made on the means employed by the imago of *Actias selene* to obtain exit from its cocoon.‡ More fully detailed observations have been given by C. E. Worthington,§ and by A. S. Packard.||

Poulton has suggested that the colour of the cocoon in certain species can be adjusted to the environment.¶ This, however, appears to be sufficiently disproved by the experiments of Bateson.**

Genus ARGEMA.

Argema, Wallengren, Öfv. Vet.-Akad. Förh. xv. p. 140 (1858).

Angas, Wallengren, Kongl. Svensk. Akad. Handl. (2), Band v. No. 4, p. 24 (1865); Sonth. Ess. Classif. Lépid. product. de Soie (deux. fascic.), p. 12 (1899).

This genus only includes a few species:—*A. mimosæ*, found in this fauna, *A. besanti* (Central and East Africa), *A. mittrei* (Madagascar), *A. mænas* (British India), *A. ignescens* (Andaman Islands), and *A. dubernardi* (Yunnan).

1. Argema mimosæ.

Saturnia mimosæ, Boisduval, Delegorg. Voy. Afr. Austr. ii. p. 600 (1847); Westw. Proc. Zool. Soc. Lond. 1849, p. 47, n. 11; Angas, Kaffirs Illustr. pl. xxx. fig. 18 (1849); Reiche, Voy. en Abyss. p. 471, pl. liii. figs. 5, 7 (1849); Guér. Men. Voy. en Abyss. par Lefebv. p. 388 (1845–50).

Tropæa mimosæ, Walk. Cat. Lepid. Heteroc. Brit. Mus. vi. p. 1261, n. 3 (1855); Wallengr. Öfv. Vet.-Akad. Förh. 1875, No. 1, p. 97.

* Proc. Amer. Ac. Arts and Science (n. s.), xx. p. 58 (1893).

† 'Entomologist,' 1902, p. 16.

‡ Trans. Entomol. Soc. Lond. v. p. 85; and Agri-horticultural Soc. of India, ix. pp. 167–9.

§ "On the Emergence of Lepidoptera from their Cocoons" ('Canadian Entomologist,' x. pp. 158–9 (1878)).

|| "The Mode of Extrication of Silkworm Moths from their Cocoons" ('American Naturalist,' xii. p. 379 (1878)).

¶ 'Colours of Animals,' pp. 142–6.

** Trans. Ent. Soc. Lond. 1892, pp. 45–52.

Actias mimosæ, Maas. & Weym. Beitr. Schmett. iii. figs. 35, 36 (1875).

Angas mimosæ, Wallengr. Kongl. Svensk. Akad. Handl. (2), Band v. No. 4, p. 24 (1865).

Argema mimosæ, Sonth. Ess. Classif. Lépid. product. de Soie (deux. fascic.), p. 17, pl. vi. figs. 2, 3 (1899).

Larva.—*Actias mimosæ*, Fawcett, Trans. Zool. Soc. Lond. vol. xv. p. 302, pl. xlvii. figs. 1, 2, larva; fig. 3, cocoon (1901).

Col. Fawcett describes the larva as :—" Ground colour grass-green, with paired dorsal series of long conical humps with yellow apices, surmounted by three or four short black hairs, and the same number of longer yellow hairs, from 2nd to 10th somites inclusive; the 11th somite has only one similar dorsal hump, and the 1st somite no hump, with the black and yellow hairs planted just above the head; a subspiracular line of small tubercles with similar hairs. Between each somite, from 3rd to 11th, a yellow transverse streak folding over a blue transverse streak at the incisions of the somites. Head and thoracic legs ferruginous, spiracles white, with ferruginous centre. In the early moults this larva is ferruginous, spiracles white, with ferruginous centre."

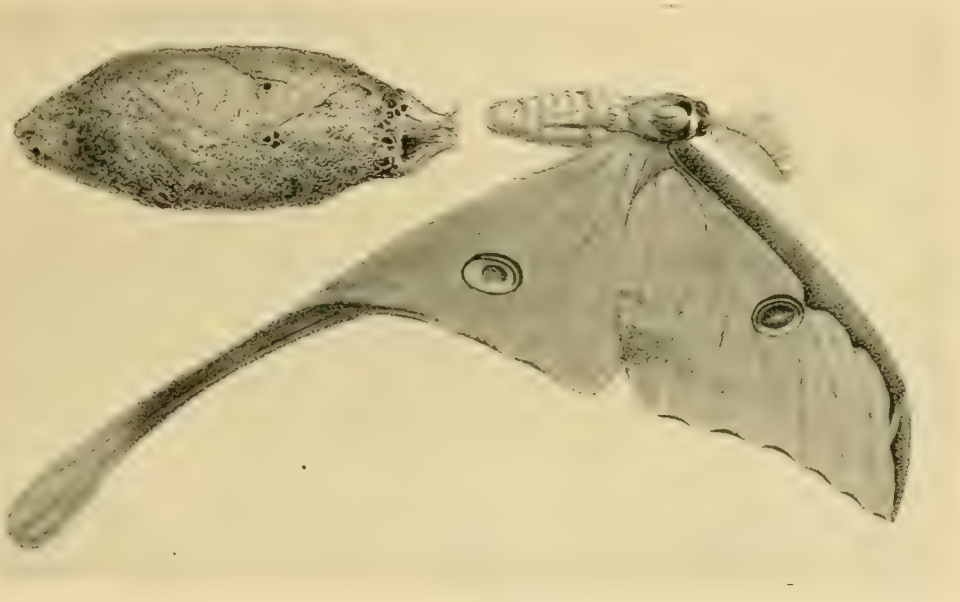

Fig. 5.—*Argema mimosæ*.

Hab.—Transvaal; Warm Baths at Waterberg (Ross); Shilouvane in Zoutpansberg (Junod; Pret. Mus. and coll. Dist.).—Common in Natal; generally distributed through East Africa to Abyssinia.

In Natal the larva feeds on what is there called "the wild mango tree" (*Sclerocarya caffra*, Sond.), a common tree in the coast districts, but not found higher up (Fawcett). Mr. Ross found the cocoons at the Warm Baths, in the Waterberg District of the Transvaal, on a tree "resembling, if not identical with, *Sclerocarya caffra*, but its identity was difficult, as at the time it was leafless."

I had long anticipated the discovery of this species in the Transvaal, though I could find no trace of it myself. I had written to Mr. Ross begging him to interest himself in the search, but a communication from him crossed my letter, bringing a cocoon from the Warm Baths, and almost immediately afterwards Mr. Swierstra sent me a specimen received from Zoutpansberg.

Genus EPIPHORA.

Epiphora, Wallengren, Wiener Ent. Monatschr. iv. p. 167 (1860); *id.* Bihang Svensk. Akad. Handl. (2), Band v. No. 4, p. 26 (1865); Dusuz. & Sonth. Ess. Classif. Lépid. product. de Soie (prem. fascic.), p. 26 (1897).

Faidherbia, Guér. Compt. Rend. lx. p. 162 (1865).

This genus contains but few species; one found in the Transvaal and elsewhere, one in Abyssinia, the others in West Africa.

2. Epiphora mythimnia. (Tab. V., fig. 3.)

Saturnia mythimnia, Westwood, Proc. Zool. Soc. Lond. 1849, p. 40, pl. viii. fig. 3.
Attacus mythimna, Walk. Cat. Lepid. Heteroc. Brit. Mus. v. p. 1216, n. 14 (1855).
Epiphora scribonia, Wallengr. Bihang Svensk. Akad. Handl. (2), Band v. No. 4, p. 26 (1865).
Epiphora mythimnia, Kirby, Syn. Cat. Lepid. Heteroc. p. 749 (1892); Dist. Ann. Mag. Nat. Hist. (6), vol. xix. p. 390 (1897); Dusuz. & Sonth. Ess. Classif. Lépid. product. de Soie (prem. fascic.), p. 26, pl. vi. fig. 3 (1897).
Larva and Pupa.—*Attacus mythimna*, W. W. Saunders, Trans. Ent. Soc. vol. iv. n. s. part iii. pl. xiii. figs. 3, *a*, *b* (1856).

Hab.—Transvaal; Barberton (Harrison & Rendall).—Found in Natal, and probably throughout the whole of South-east Africa.

The figures of the larva and cocoon contributed by Mr. Saunders were from drawings made by Mr. R. W. Plant, of Natal.

Larva at Delagoa Bay feeds on a tree called *Psékamafoura* (Junod).

Genus LUDIA.

Ludia, Wallengren, Bihang Svensk. Akad. Handl. (2), Band v. No. 4, p. 25 (1865).

A small genus; one species found in the Transvaal; a second, described by Hampson, from East Africa; three described by Aurivillius and Karsch from the Cameroons; and one by Felder from Bogos, Abyssinia.

3. Ludia delegorguei. (Tab. V., fig. 8.)

Saturnia delegorguei, Boisduval, Voy. Afr. Austr. ii. p. 601 (1847).
Saturnia (Henucha?) delegorguei, Westw. Proc. Zool. Soc. Lond. 1849, p. 59, pl. x. fig. 4.
Henucha delegorguei, Walk. Cat. Lepid. Heteroc. Brit. Mus. vi. p. 1332 (1855); Butl. Proc. Zool. Soc. Lond. 1888, p. 84.
Ludia delegorguei, Wallengr. Bihang Svensk. Akad. Handl. (2), Band v. No. 4, p. 25 (1865).
Larva.—*Henucha delegorguei*, Junod, Bull. Soc. Neuchat. Sci. Nat. xxvii. p. 241 (1899).

Hab.—Transvaal; Johannesburg (Hyde).—Found largely throughout South and South-east Africa; I have specimens from Grahamstown (Schonland) and Natal (Spiller). Emin Pasha found it at Monbuttu in Equatorial Africa.

Caterpillar feeds at Delagoa Bay on a tree called *Mpachla* (Junod). Mrs. Monteiro describes the larva, observed at the same locality, as cream-white, covered with long coarse white hair.*

Mrs. Monteiro states that she found her first specimen of this larva on a "tree-trunk just as he was pulling down the last bit of bark over himself preparatory to his change. He was violent when I disturbed him, but completed his bark covering on the way home." Col. Fawcett describes the larva of another species which he included in this genus as *L. smilax*, Westw., but for which the genus *Bolocera* was founded by Felder, as forming "a cocoon

* 'Delagoa Bay,' p. 197.

round itself with its hairs on the side of the box"; and Miss Barrett, from observations at Umtata, describes the cocoons of this species as "very pretty, ornamented with pieces of the leaves of the lilac," the plant on which these larvæ fed.*

Subfam. SPHINGICAMPINÆ.

Sphingicampidæ, Packard, 'Psyche,' vol. ix. p. 280 (1901).

We have already referred to the characters relied on for this subfamily (as we regard it) by Packard (*ante*, p. 50), and which to us represents a division of the family Saturniidæ, known principally by the subterranean and chrysalid nature of the pupation.

Chrysalids of several species belonging to this subfamily have been sent to Europe, from which imagines have safely emerged. In the spring of 1886 Wailly received chrysalids of *Gynanisa isis*, *Angelica tyrrhea*, and *Bunæa alcinoe*, from which some thirty-six Moths emerged between July 1st and October 19th.†

Genus NUDAURELIA.

Nudaurelia, Rothschild, Novitates Zool. vol. ii. p. 41 (1895); Sonth. Ess. Classif. Lépid. product. de Soie (3e fascic.), p. 7 (1901).‡

Sonthonnax enumerates twenty species under this genus; one of these, however, described by myself as *Antherea bracteata*, I have removed to the genus *Cinabra*. It is purely Ethiopian in distribution.

4. **Nudaurelia arabella.** (Tab. III., fig. 6.)

Antheræa Arabella, Aurivillius, Entomol. Tidskrift, 1893, p. 203; Dist. Ann. Mag. Nat. Hist. (6) vol. xix. p. 390 (1897).

Nudaurelia arabella, Rothsch. Novitates Zool. vol. ii. p. 43 (1895); Sonth. Ess. Classif. Lépid. product. de Soie (3e fascic.), p. 8, pl. ii. fig. 2 (1901).

Hab.—Transvaal; Pretoria (Distant), Johannesburg (Cregoe), Middelburg.—Orange River Colony; Natal; Kaffraria.

Miss Barrett has described a larva of this species found at Libodi, Transkei, just before pupating. It "was quite smooth, without hairs or spikes," and was "a very ugly, heavy, earthy-looking caterpillar with a thick ridge across every segment." §

I only took two specimens of this species during my stay at Pretoria. The first one I captured at breakfast time in the Church Square, a belated reveller overtaken by daylight. The most I saw were at Middelburg, impaled on the walls of the office of the then station-master, an individual who, from his manners, would apparently have enjoyed the impalement of "Engelschman" passengers as well.

* 'Entomologist's Monthly Magazine,' 1901, p. 191.

† 'Entomologist,' xxix. pp. 354–5 (1896).

‡ This work forms part of the tenth volume of 'Annales du Laboratoire de la Soie,' published at Lyon. The separate *Essai* is, however, only available to me, and I therefore use its pagination.

§ 'Entomologist's Monthly Magazine,' vol. xxxvii. p. 193.

5. Nudaurelia cytherea. (Tab. V., fig. 9.)

Bombyx cytherea, Fabricius, Syst. Entomol. p. 557, n. 5 (1775); Roem. Gen. Ins. tab. xxi. fig. 1 (1781).
Bombyx Hesperus minor, Sulz. Gesch. Ins. tab. xxi. fig. 1 (1776).
Attacus capensis, Stoll, Pap. Exot. iv. tab. 302 A, tab. 325 G (1781).
Antheræa cytherea, Kirby, Syn. Cat. Lepid. Heteroc. p. 757 (1892); Dist. Ann. Mag. Nat. Hist. (6), vol. xix. pp. 390 and 392 (1897).
Nudaurelia cytherea, Sonth. Ess. Classif. Lépid. product. de Soie (3e fascic.), p. 14, pl. v. figs. 1 and 2 (1901).

Hab.—Transvaal; Pretoria (Distant), Johannesburg (Cregoe), Lydenburg District (Krantz; Pret. Mus.).—Found all over Southern Africa, including the neighbourhood of Cape Town. I have specimens from Plettenberg Bay; Knysna.

A most variable species, both in colour and size. The specimen here figured is a small male taken at Johannesburg. It varies in the ground colour from very pale ochraceous to testaceous in some specimens, and even dark castaneous in others. The fasciæ crossing the anterior wings are also inconstant in their distance from one another, as is also the inner fascia in the extent to which it is angularly waved. In the posterior wing the ocellated spot sometimes touches, or almost touches, the transverse submarginal fascia; while in other specimens it is distinctly removed from it. I have myself taken different varieties in the same month at Pretoria.

M. Arnold Pictet has recently published the principal results of his experiments in producing a varietal form of some imagines by a radical change of food provided for the larvæ.* He has experimented with *Bombyx quercus* as well as with other species, and the whole proceeding is highly suggestive, and is well worth following with these Transvaal Saturniids.

6. Nudaurelia wahlbergi. (Tab. V., fig. 2.)

Saturnia wahlbergii, Boisduval, in Delegorgue, Voy. Afr. Austr. ii. p. 600 (1847); Herr-Schäff. Aussereurop. Schmett. i. fig. 95 (1854).
Antheræa wahlbergii, Wallengr. Öfv. Vet.-Akad. Förh. xxxii. (1) p. 97 (1876).
Nudaurelia wahlbergi, Rothsch. Novitates Zool. vol. ii. p. 45 (1895).
Nudaurelia Dione walbergi, Sonth. Ess. Classif. Lépid. product. de Soie (3e fascic.), p. 19, pl. vi. figs. 4 and 5 (1901).
Larva and Pupa.—*Nudaurelia wahlbergi*, Fawcett, Trans. Zool. Soc. Lond. vol. xv. p. 303, pl. xlvii. figs. 4, 5 (1901).

The larva has the "*ground colour deep velvety black, each somite bearing four branched ferruginous spines with reddish bases, two subdorsally and two laterally, from 2nd to 12th somite inclusive, the spines on the 2nd somite having black bases. Between the subdorsal and the lateral row of spines are placed a collection of small yellow spots on each somite; the red bases of the subdorsal and lateral spines being joined on 10th and 11th somites. Spiracles white; a subspiracular row of small yellowish tubercles bearing a few whitish hairs, one on each somite. Head and legs concolorous with body*" (Fawcett).

Hab.—Transvaal; Shilouvane in Zoutpansberg (Junod, Pret. Mus. and Coll. Dist.). — Common in Natal, and widely distributed in South-east and Equatorial Africa.

Larva feeds at Durban on castor-oil plant (A. Ross, *in litt.*). Feeds on English oak, but has also been taken in large numbers on peach trees in gardens at Maritzburg; both these trees being imported species in Natal (Fawcett).

* *Cf.* 'Revue Scientifique,' ser. 4, tome 18, p. 793 (1902).

Sonthonnax has placed several species together as varieties, or local races of *N. dione*, Fabr. I have kept the present form distinct, as it is apparently, or at least to the present time, the only one known from the Transvaal, and is there exceedingly scarce, being only received from the more northern and warmer parts of that colony.

7. Nudaurelia arata. (Tab. VII., fig. 1.)

Saturnia arata, Westwood, Proc. Zool. Soc. Lond. 1849, p. 41, pl. vii. fig. 2.

Antheræa arata, Maass. & Weym. Beitr. Schmett. iv. fig. 59 (1851); Dist. Ann. Mag. Nat. Hist. (6) vol. xix. p. 390 (1897).

Nudaurelia arata, Rothsch. Novitates Zool. vol. ii. p. 43 (1895); Sonth. Ess. Classif. Lépid. product. de Soie (3e fascic.), p. 23, pl. ix. fig. 1 (1901).

Larva and Pupa.—*Anthona arata*, W. W. Saunders, Trans. Ent. Soc. vol. iv. n. s. part iii. pl. xiv. figs. 1, 1*a* (1856).

Hab.—Transvaal; Barberton (Harrison).—Also found in Natal, and recorded from Equatorial and West Africa.

The figures of the larva and pupa given by Mr. Saunders were from drawings made by Mr. R. W. Plant, of Natal.

The only specimen of this species I brought from the Transvaal was given me by Mr. Harrison, who picked it up dead in his garden. Mr. Harrison had lived very many years at Barberton, and had never seen another specimen.

8. Nudaurelia belina. (Tab. VI., fig. 4.)

Saturnia Belina, Westwood, Proc. Zool. Soc. Lond. 1849, p. 41, pl. viii. fig. 2.

Antheræa Belina, Walk. Cat. Lepid. Heteroc. Brit. Mus. p. 1241, n. 2 (1855); Dist. Ann. Mag. Nat. Hist. (6) vol. xix. pp. 390 and 392 (1897).

Nudaurelia belina, Rothsch. Novitates Zool. vol. ii. p. 43 (1895); Sonth. Ess. Classif. Lépid. product. de Soie (3e fascic.), p. 24, pl. ix. figs. 2 and 3 (1901).

Larva.—*Bunæa Belina*, Junod, Bull. Soc. Neuchat. Sci. Nat. xxvii. p. 241 (1899).

Hab.—Transvaal; Pretoria (Distant), Lydenburg District (Kranz; Pret. Mus.).—Recorded also from Natal, Zululand, and Delagoa Bay; found by Mr. Muir at Mozambique. Probably generally distributed throughout South-east and Equatorial Africa.

Larva feeds on a tree called *Mpesou* at Delagoa Bay (Junod). On *Sclerocarya caffra*, wild mango, at Durban (A. Ross).

I found this a common species around the electric lamps at Pretoria. It is also a variable species, and varies in a similar manner to *N. cytherea*, as already detailed.*

Genus BUNÆA.

Bunæa, Hübner, Verz. bek. Schmett. p. 154 (1822?); Walk. Cat. Lepid. Heteroc. Brit. Mus. v. p. 1226 (1855); Sonth. Ess. Classif. Lépid. product. de Soie (3e fascic.), p. 27 (1901).

Thyella, Wallengr. Öfv. Vet.-Akad. Förh. xv. p. 141 (1858).

A somewhat large genus, entirely Ethiopian in distribution. Kirby, in his 'Catalogue' (1892), enumerated twenty-five species; Rothschild (1895) revises and reduces the genus to

* On one variety I wrote: "This cannot be considered a seasonal form, having been taken at Pretoria in November, and the normal form of the species on the 30th October" (Ann. Mag. Nat. Hist. (6) vol. xix. p. 392). Mon. Sonthonnax appears to have misunderstood this remark, as he writes: "Cette espèce se transforme sans tisser de coques soyeuses, d'après M. Distant, et n'est pas rare à Pretoria d'octobre à novembre" (Ess. Classif. Lépid. product. de Soie (3e fascic.), p. 25).

only sixteen species; Sonthonnax now brings the number up to twenty-six. I can only enumerate two species from the Transvaal.

9. Bunæa tyrrhena. (Tab. VI., fig. 1.)

Saturnia Tyrrhena, Westwood, Proc. Zool. Soc. Lond. 1849, p. 51, pl. viii. fig. 1.

Bunæa tyrrhena, Kirby, Syn. Cat. Lepid. Heteroc. p. 752 (1892); Rothsch. Novitates Zool. vol. ii. p. 39, n. 5 (1895); Sonth. Ess. Classif. Lépid. product. de Soie (3e fascic.), p. 36, pl. xviii. f. 2 (1901); Karsch, Berlin. Ent. Zeitschr. xxxvii. p. 497 (1892).

Var. *Bunæa catochroa*, Karsch, Berlin. Ent. Zeitschr. xxxvii. p. 497, pl. xx. fig. 4 (1893); subsp. *catochra*, Rothsch. Novitates Zool. vol. ii. p. 39, n. 5 (1895).

Hab.—Transvaal; Barberton (Pret. Mus. and Coll. Dist.).—An apparently common species in Natal, whence I have received several specimens collected at Durban by Mr. A. Ross. It is also recorded from West Africa (Cameroons—Karsch).

Larva feeds on *Grumilea capensis* at Durban (A. Ross, *in litt.*).

10. Bunæa alcinoe. (Tab. IV., fig. 7.)

Attacus alcinoe, Stoll, Pap. Exot. iv. t. 322, A, B (1780).

Attacus caffraria, Stoll, Suppl. Cram. Pap. Exot. pl. xxxi. fig. 2 (1791).

Bunæa caffra, Hübn. Verz. bek. Schmett. p. 154, n. 1608 (1822?); Westw. Ang. Kaff. Ill. pl. xxx. fig. 15 (1849).

Bunæa alcinoe, Walk. Cat. Lepid. Heteroc. Brit. Mus. v. p. 1228, n. 1 (1855); Sonth. Ess. Classif. Lépid. product. de Soie (3e fascic.), p. 43 (1901).

Bunæa angasana, Dist. Ann. Mag. Nat. Hist. (6) vol. xix. pp. 390 and 391 (1897).

Larva.—*Bunæa caffraria*, Bairstow, 'The Naturalist,' vol. ix. p. 136, pl. viii. fig. 2 (1884); Fawcett, Trans. Zool. Soc. Lond. vol. xv. pt. vi. p. 303, pl. xlvii. fig. 8 (1901).

"*Ground colour deep velvety black; each somite, from 4th to 12th, bearing eight yellow tubercular processes, two subdorsally, two laterally, and four (in two rows) on each side subspiracularly. The 2nd somite bears four black processes, two subdorsally and two laterally; the 3rd somite bears four black processes, as in the 2nd, and two small yellow processes on each side, in line with the subspiracular processes on the other somites. Spiracles red; those on the 4th to 11th somites being surrounded by an irregularly shaped red area. Head and legs concolorous with body*" (Fawcett).

Hab.—Transvaal; Pretoria (Distant), Johannesburg (Cregoe).—I have also received it from Natal (Spiller), Durban (Ross), Delagoa Bay (Junod). Sonthonnax records it from Madagascar.

The food-plants of the larva have been thus described:—At Johannesburg, the cabbage tree, "Kipper sol" of the Dutch (A. Ross, *in litt.*); in Natal, at Durban, *Celtis kraussiana* and *Ekebergia meyeri* (Quekett); at and near Maritzburg, a species of *Cussonia* (Fawcett); at Delagoa Bay, the *Psékamafoura* and *Nyamari* (Junod *).

In previously writing † that the dark form (here figured) was the common one in the Transvaal, especially at Pretoria, I applied the name *angasana* to it, having mistaken the figure in Angas's 'Kaffirs,' and having in mind the opinion of Rothschild that this was a variety of the species.‡ As far as I am aware, the typical *B. angasana* has not been discovered in the Transvaal, but the paler typical form of *B. alcinoe* has now been received from that Colony.

* Bull. Soc. Neuchatel Sci. Nat. xxvii. p. 241 (1899). † Ann. Mag. Nat. Hist. (6) vol. xix. p. 391 (1897).

‡ 'Novitates Zoologicæ,' vol. ii. p. 39 (1895).

Genus ANGELICA, n. nom.

Thyella, Felder, Reise d. Novara, Lepid. pl. lxxxv. fig. 5 (1874); Sonth. Ess. Classif. Lépid. product. de Soie (3e fascic.), p. 52 (1901); *nom. præocc.**

A small Ethiopian genus, under which three species are enumerated, two of which are found in the Transvaal.

11. Angelica zambesina. (Tab. V., fig. 4.)

Bunæa zambesina, Walker, Cat. Lepid. Heteroc. Brit. Mus. xxxii. p. 523 (1865).

Thyella zambesia, Feld. Reise d. Novara, Lepid. iv. tab. lxxxv. fig. 5 (1874); Sonth. Ess. Classif. Lépid. product. de Soie (3e fascic.), p. 52, pl. xxiv. fig. 1 (1901).

Antherea zambesia, Maass. & Weym. Beitr. Schmett. v. fig. 96 (1886).

Nudaurelia zambesina, Rothsch. Novitates Zool. vol. ii. p. 43 (1895).

Hab.—Transvaal; Shilouvane in Zoutpansberg (Junod; Pret. Mus. and Coll. Dist.).—The missionary H. A. Junod found this species not uncommon at Delagoa Bay, and it was also contained in a collection made by Mr. Muir at Mozambique.

At Delagoa Bay the larvæ are found in November "*par familles*" on a small shrub growing on the hills (Junod †).

12. Angelica tyrrhea. (Tab. VI., fig. 2.)

Attacus Tyrrhea, Cramer, Pap. Exot. i. tab. xlvi. A (1775).

Bombyx Tyrrhea, Fabr. Gen. Ins. p. 278 (1777).

Antheræa Tyrrhea, Walk. Cat. Lepid. Heteroc. Brit. Mus. p. 1244, n. 6 (1855); Dist. Ann. Mag. Nat. Hist. (6) vol. xix. p. 391 (1897).

Nudaurelia tyrrhea, Rothsch. Novitates Zool. vol. ii. p. 43 (1895).

Thyella thyrrhea, Sonth. Ess. Classif. Lépid. product. de Soie (3e fascic.) p. 55, pl. xxv. fig. 1 (1901).

Hab.—Transvaal; Pretoria (Distant), Johannesburg (Cregoe and Ross). — It is widely distributed over Southern Africa.

Larva feeds on willow, black wattle, &c. (A. Ross, *in litt.*).

Genus MELANOCERA.

Melanocera, Sonthonnax, Ess. Classif. Lépid. product. de Soie (3e fascic.) p. 58 (1901).

Sonthonnax has proposed this genus for the reception of three African species, one of which can be alone included in this enumeration.

13. Melanocera menippe. (Tab. V., fig. 10.)

Saturnia menippe, Westwood, Proc. Zool. Soc. Lond. 1849, p. 43, pl. ix. fig. 2.

Antheræa menippe, Walk. Cat. Lepid. Heteroc. Brit. Mus. p. 1243, n. 5 (1855); Dist. Ann. Mag. Nat. Hist. (6) vol. xix. pp. 391 and 392 (1897).

Nudaurelia menippe, Rothsch. Novitates Zool. vol. ii. p. 43 (1895).

Melanocera menippe, Sonth. Ess. Classif. Lépid. product. de Soie (3e fascic.), p. 58, pl. xxv. fig. 2 (1901).

Larva.—*Antherea menippe*, Bairstow, 'The Naturalist,' vol. ix. p. 136, pl. viii. fig. 1 (1884).

Bunæa menippe, Junod, Bull. Soc. Neuchat. Sci. Nat. xxvii. p. 241 (1899).

"Rouge-vin" with black spines (Junod).

* *Thyella* has been previously used as a generic name—in Diptera (1863), in Mollusca (1865)—and therefore cannot be ascribed to Felder (1874). It was founded by Wallengren (1858), but from his type becomes a synonym of *Bunæa*.

† Bull. Soc. Neuchat. Sci. Nat. xxvii. p. 241 (1899).

Hab.—Transvaal; Barberton (Rendall). — Described from Natal; not uncommon at Delagoa Bay; recorded from Port Elizabeth.

Food-plants of larva:—At Delagoa Bay on *Ochna purpurascens?* (Junod), on *Ochna atropurpurea* (Mrs. Monteiro *).

Varies in having the outer margins of the wings either pale ochraceous or smoky-brown. This variation was observed in specimens taken at the same time in Barberton.

Genus CINABRA.

Cinabra, Sonthonnax, Ess. Classif. Lépid. product. de Soie (3e fascic.), p. 61 (1901).

A genus containing three species, all of which are found in the Transvaal.

14. Cinabra hyperbius. (Tab. V., fig. 1.)

Saturnia hyperbius, Westwood, in Oates's 'Matabele Land,' 1st ed., p. 357 (1881); *id.* Proc. Zool. Soc. Lond 1881, p. 143, pl. xiii. fig. 3.

Bunæa hyperbius, Maass. & Weym. Beitr. Schmett. v. fig. 99 (1886).

Cinabra hyperbius, Sonth. Ess. Classif. Lépid. product. de Soie (3e fascic.), p. 61, pl. xxvi. figs. 2 and 3.

Hab.—Transvaal; Pretoria (Pret. Mus. & Coll. Dist.), Johannesburg (Cregoe). — Distributed throughout Central and South-east Africa, but apparently seldom a common species.

15. Cinabra bracteata. (Tab. III., fig. 5.)

Antheræa bracteata, Distant, Ann. Mag. Nat. Hist. (6) vol. xix. p. 393 (1897).

Hab.—Pretoria (Distant).

The typical male specimen is here figured; in a female example since received from the same locality, the anterior wings are duller ochraceous, or slightly tinged with plumbaginous.

16. Cinabra pygmæa. (Tab. V., fig. 5.)

Bunæa pygmæa, Maassen & Weymer, Beiträg. Schmett. v. fig. 100 (1886).

Gonimbrasia pygmæa, Kirby, Syn. Cat. Lepid. Heteroc. p. 753 (1892).

Cinabra pygmæa, Sonth. Ess. Classif. Lépid. product. de Soie (3e fascic.), p. 62 (1901).

Var. *Bunæa pygela*, Druce, Proc. Zool. Soc. Lond. 1886, p. 409, pl. xxxviii. fig. 1.

Gonimbrasia pygela, Kirby, Syn. Cat. Lepid. Heteroc. p. 753 (1892); Dist. Ann. Mag. Nat. Hist. (6) vol. xix. pp. 390 and 391 (1897).

Hab.—Transvaal; Pretoria (Distant, and in Pret. Mus.).—Matabeleland.

I only secured two specimens of this species during my whole stay in Pretoria, both of which were taken at light. They are somewhat intermediate in form between *pygela*, Druce, and *pygmæa*, M. & W.

Genus GYNANISA.

Gynanisa, Walker, Cat. Lepid. Heteroc. Brit. Mus. vi. p. 1267 (1855).

Ancalæspina, Wallengr. Öfv. Vet.-Ak. Förh. xv. p. 140 (1858); *id.* Bihang Svensk. Akad. Handl. (2) Band v. No. 4, p. 27 (1865).

* 'Delagoa Bay,' p. 196.

A very small genus confined to the Ethiopian Region, of which but one species is yet recorded from the Transvaal.

17. Gynanisa maia. (Tab. VI., fig. 3.)

Saturnia maia, Klug, Neue Schmett. tab. v. fig. 1 (1836).
Saturnia campionea, Sign. Bull. Soc. Ent. France (2), iii. p. xcvii. (1845).
Gyanisa Isis, Walk. Cat. Lepid. Heteroc. vi. p. 1267, n. 1 (1855).
Ancalæspina Tata, Wallengr. Wiener Ent. Monatschr. iv. p. 168 (1860); *id.* Bihang Svensk. Akad. Handl. (2) Band v. No. 4, p. 27 (1865).
Gynanisa maia, Kirby, Syn. Cat. Lepid. Heteroc. p. 763 (1892); Dist. Nat. in Transvaal, p. 238 (1892); Ann. Mag. Nat. Hist. (6) vol. xix. p. 391 (1897).
Larva.—*Gynanisa maia*, Fawcett, Trans. Zool. Soc. Lond. vol. xv. p. 304, pl. xlvii. fig. 6.

Col. Fawcett has thus described the larva:—"*Ground colour pale green, with paired dorsal series of humps; each somite, from 2nd to 12th, bearing four silver spikes with yellow points inclined backwards, one subdorsally and one laterally on each side; also a number of small silver spots placed irregularly over each somite; the first somite has no spikes, but is raised to a sharp ridge, with a black edge, which may be of assistance to the larva in forcing its way through the ground. Spiracles purple, and immediately beneath them a purple lateral line having on its lower edge a yellow raised lateral line bearing a small orange-coloured tubercle on each somite, and thickened considerably above anal claspers, where it has a series of small black tubercles superiorly. Head green, with black side-streaks defining the eye. Under surface darker green with minute white spots, and a row of small red tubercles, one on each somite just above the claspers, which are green. Thoracic legs pale brown banded with black.*"

Hab.—Transvaal; Pretoria (Distant), Barberton (Rendall), Lydenburg District (Pret. Mus. and Coll. Dist.).—Widely distributed throughout South and East Africa; recorded from British Central Africa by Butler; and found by Donaldson Smith in his expedition from Somaliland to Lake Lamu (*vide* Holland).

The food-plants of the larva have been recorded as follows:—Johannesburg, mimosa (A. Ross, *in litt.*); in Natal, *Elephantorrhiza burchelli*, the common wattle (Fawcett); in Transkei, mimosa (Barrett *).

Double-brooded in Natal, the larvæ appearing in November, and the imagines emerging end of January; the second brood of larvæ appearing in March and emerging in the following October (Fawcett).

Genus CIRINA.

Cirina, Walker, Cat. Lepid. Heteroc. Brit. Mus. vi. p. 1382 (1855).
Sculna, Wallengr. Öfv. Vet.-Ak. Förh. xv. p. 139 (1858).

About three species are at present included in this genus, all of which are Ethiopian, and two found in the Transvaal.

18. Cirina forda.

Saturnia forda, Westwood, Proc. Zool. Soc. Lond. 1849, p. 52, n. 18.
Bunæa forda, Walk. Cat. Lepid. Heteroc. Brit. Mus. p. 1238, n. 8 (1855).
Sculna invenusta, Wallengr. Wiener Ent. Monatschr. iv. p. 168 (1860); *id.* Bihang Svensk. Akad. Handl. (2) Band v. No. 4, p. 27 (1865).

* 'Entomologists' Monthly Magazine,' vol. xxxvi. p. 143.

Cirina cana, Feld. Reise d. Novara, Lepid. iv. tab. lxxxviii. fig. 3 (1874).
Cirina forda, Kirby, Syn. Cat. Lepid. Heteroc. p. 763 (1892); Rothsch. Novitates Zool. vol. ii. p. 44 (1895); Dist. Ann. Mag. Nat. Hist. (6) vol. xix. p. 391 (1897).

Hab.—Transvaal; Pretoria (Distant), Barberton (Rendall).—The species was originally described from Natal, and is probably widely distributed throughout South-east Africa.

I have not figured this species, as it is closely allied to the following one (*C. similis*, Tab. III., figs. 1 and 2), from which it is separable by the smaller size of both sexes, and by the females having the posterior margins of the hind wings distinctly angulated.

19. Cirina similis. (Tab. III., fig. 1 ♂, 2 ♀).

Cirina similis, Distant, Ann. Mag. Nat. Hist. (6) vol. xix. p. 393 (1897).

Hab.—Transvaal; Pretoria (Distant).—Gambia (Brit. Mus.).

Genus PSEUDAPHELIA.

Aphelia, Westwood, Proc. Zool. Soc. Lond. 1849, p. 61, *nom. præocc.*
Pseudaphelia, Kirby, Syn. Cat. Lepid. Heteroc. p. 771 (1892).

This genus contains only one species, a well-known day-flying Moth in Natal.

20. Pseudaphelia apollinaris. (Tab. V., fig. 7.)

Saturnia apollinaris, Boisduval, in Delegorgue, Voy. Afr. Austr. ii. p. 601 (1847); Guér. in Lefevre, Voy. Abyss. vi. p. 390 (1849).
Saturnia (Aphelia) apollinaris, Westw. Proc. Zool. Soc. Lond. 1849, p. 61.
Aphelia apollinaris, Walk. Cat. Lepid. Heteroc. Brit. Mus. vi. p. 1320, n. 1 (1855); Wallengr. Bihang Svensk. Akad. Handl. (2) Band v. No. 4, p. 24 (1865).
Bombyx balanoal, Guér. in Lefevre, Voy. Abyss. Atlas, tab. xii. figs. 3, 4 (1847).
Heniocha paleacea, Herr.-Schäff. Ausser-europ. Schmett. i. fig. 308 (1855).
Pseudaphelia apollinaris, Kirby, Syn. Cat. Lepid. Heteroc. p. 771 (1892).
Larva and Pupa.—*Pseudaphelia apollinaris*, Fawcett, Trans. Zool. Soc. Lond. vol. xv. pt. vi. p. 305, pl. xlvii. figs. 11, 12 (1901).

Col. Fawcett thus describes the larva:—"*Ground colour bluish grey, each somite with a broad transverse indented black streak, thickest on second somite, and two finer black transverse lines across the upper part of the body between the somites. Body broader in the middle than anteriorly or posteriorly. Above anal extremity a sharp-pointed black horn—a fine black spiracular line, and immediately below it a broad raised ferruginous line bearing a small black tubercle crowned with some short yellow hairs on each somite. Under surface and abdominal claspers pale yellow. Head, thoracic legs, and anal claspers black. A tuft of short hairs on the summit of the 2nd somite.*"

Hab.—Transvaal; Shilouvane in Zoutpansberg (Junod, Pret. Mus. and Coll. Dist.). — Widely distributed from Natal to Abyssinia.

Larva in Natal feeds on *Jurrea heterophylla*, and undergoes its transformation underground. Period passed in pupa condition (in March) was seventeen days (Fawcett).

Colonel Bowker had taken the Butterfly *Salamis anacardii* in cop. with this Moth at Umgeni Hill in Natal.*

* Proc. Ent. Soc. 1880, p. xxiii.

Genus HENIOCHA.

Heniocha, Hübner, Verz. bek. Schmett. p. 157 (1822 ?).

Kirby, in his 'Catalogue,' places two species found in British India under this genus, but Hampson locates these as synonyms in the genus *Saturnia*.* The genus may therefore be considered as confined to the Ethiopian Region.

A South African species, *H. appolonia*, Cram., which I neither found in the Transvaal, nor have received from that colony, is reported by Miss Barrett at Umtata as evidently coming "from buried chrysalids, as they are so generally found in the long grass under a bush"; a chrysalis was indeed found bare, half in and half out of the ground.†

21. Heniocha flavida. (Tab. IV., fig. 11.)

Saturnia flavida, Butler, Ann. Mag. Nat. Hist. (4) vol. xx. p. 462 (1877); Westw. in Oates's 'Matabele Land,' p. 357 (1881).

Heniocha apollonia ab. *flavida*, Rothsch. Novitates Zool. vol. ii. p. 49 (1895).

Heniocha flavida, Kirby, Syn. Cat. Lepid. Heteroc. p. 771, n. 9 (1892); Dist. Ann. Mag. Nat. Hist. (6) vol. xix. p. 391 (1897).

Hab.—Transvaal; Pretoria (Distant).

I only took two specimens during my stay in the Transvaal Colony. They were both found at the base of an electric light near Pretoria.

22. Heniocha dyops. (Tab. III., fig. 9.)

Saturnia dyops, Maassen & Weymer, Beitr. Schmett. v. figs. 113, 114 (1886).

Heniocha dyops, Kirby, Syn. Cat. Lepid. Heteroc. p. 771, n. 6 (1892); Dist. Ann. Mag. Nat. Hist. (6) vol. xix. pp. 391 and 394 (1897).

Hab.—Transvaal; Pretoria (Distant).

I found this species not uncommon at Pretoria, but very variable in markings. One of the specimens now before me agrees with the typical figure in having the ocellated spot of the anterior wings connected with the transverse fascia; in all the other specimens they are more or less widely separated. The discal spot to the posterior wings is sometimes very distinct, or absent on one wing, or totally wanting on both; the inner transverse fascia to the same wings is either complete, or sometimes abbreviated.

Genus GOODIA.

Goodia, Holland, Ent. News Philad. p. 178 (1893); Ann. Mag. Nat. Hist. (6) vol. xii. p. 251 (1893).

Orthogonioptilum, Karsch, Berlin. Ent. Zeitschr. xxxvii. p. 501 (1893).

Lasioptila, Kirby, Ann. Mag. Nat. Hist. (6) vol. xviii. p. 387 (1896).

I include this genus in the Sphingicampinæ on the following authority. Butler describes an allied species from British East Africa (*G. hollandi*), and states, on the information of its captor, C. S. Betton, larva obtained 12th December, *pupated* 20th December, emerged 4th May following.‡

* 'Fauna British India,' Moths, vol. i. p. 23. † 'Entomologists' Monthly Magazine,' 1901, p. 192.

‡ Proc. Zool. Soc. 1898, p. 431.

23. **Goodia kuntzei.** (Tab. V., fig. 6).

Saturnia Kuntzei, Dewitz, Verh. Leop.-Carol. Akad. xlii. p. 70, Taf. 2 (iii.), fig. 14 (1881).
Saturnia (?) *Kunzii*, Kirby, Syn. Cat. Lepid. Heteroc. p. 773, n. 18 (1892).
Orthogonioptilum Kunzei, Rothsch. Novitates Zool. vol. ii. p. 49 (1895).
Lasioptila ansorgei, Kirby, Ann. Mag. Nat. Hist. (6) vol. xviii. p. 387 (1896).
Goodia Kuntzei, Butl. Proc. Zool. Soc. Lond. 1898, p. 431.

Hab.—Transvaal; Barberton (Rendall), Shilouvane in Zoutpansberg (Junod; Pret. Mus. and Coll. Dist.).—Widely distributed. Described by Dewitz from Guinea; by Kirby from East Africa.

Fam. SPHINGIDÆ.

Sphingidæ (Latreille), Packard, 'Guide to the Study of Insects,' p. 271 (1876).

We have chosen Packard's description of the characters of this family:—"*The Hawk Moths or Humming-bird Moths are among the largest and stoutest of Lepidoptera. The body is very stout, spindle-shaped, with narrow, powerful wings. Their flight is, consequently, exceedingly swift and strong. The antennæ are prismatic in form, and thickened in the middle. The tongue, or maxillæ, is remarkably long, so that the insect is able, while on the wing, to explore the interior of deep flowers. This habit of remaining for a considerable time poised in the air on their rapidly vibrating wings, causes them to be mistaken for Humming-birds. At rest the wings are folded, roof-like, over the body. The larvæ have sixteen legs, and on the last segment is an acute horn, sometimes represented by a simple tubercle. At rest they stand with the fore part of the body elevated in a supposed Sphinx-like attitude. The larvæ descend into the earth* * *and transform, often in rude earthen cocoons, moulded into form by the pressure of the body. The tongue-case is usually free.*"

While these pages are going through the press, Messrs. Rothschild and Jordan are preparing for publication a complete revision of the family, which will doubtless be our standard authority for many years to come. I had hoped to have followed and made use of it here, but some unavoidable delay has prevented it appearing in time for that purpose. Dr. Jordan has, however, kindly given me the arrangement of genera which will represent their classification, and has also done me a greater service by giving me the generic position which they advocate for the species I here enumerate. I have followed this guidance, and have discarded any arrangement in subfamilies, as being unnecessary when a revised classification is on the eve of publication. The sequence of genera will accord, and it must be remembered that this is a faunistic rather than a classificatory work.

The very peculiar larvæ of these Moths have incited a vast amount of interest, and the search for evidence as to protection acquired by their colour-markings and aggressive attitudes has resulted in the acquisition of some facts and considerable theory. Both Weismann † and Poulton ‡ have given much time and consideration to these matters, and those who desire a presentment of their views are best referred to their writings.

* This is not invariably the case, as detailed at p. 68.
† 'Studies in the Theory of Descent,' Eng. transl. (1882).
‡ *Cf.* Series of Papers contributed to various Scientific Societies from 1883 to present time.

The following bibliography includes most of the principal writings on South African Sphingidæ :—

Walker, Fras. 'List of the Specimens of Lepidopterous Insects in the Collection of the British Museum.' Part viii.—Sphingidæ. (1856.)

Butler, A. G. "Revision of the Heterocerous Lepidoptera of the Family Sphingidæ." (Trans. Zool. Soc. Lond. vol. ix. pp. 511–644, plates xc.–xciv. (1876).)

Boisduval, J. A. 'Histoire Naturelle des Insectes. Species Général des Lépidoptères. Hétérocères.' Tome Premier. Sphingides, &c. (1875.)

Distant, W. L. "On a Collection of Heterocera made in the Transvaal. Fam. Sphingidæ." (Ann. Mag. Nat. Hist. Ser. 6, vol. xix. p. 579 (1897).)

Rothschild, Hon. W., and Dr. Karl Jordan. "A Revision of the Lepidopterous Family Sphingidæ." ('Novitates Zoologicæ,' ix., Supplement (1903).)*

Genus CEPHONODES.

Cephonodes, Hübner, Verz. bek. Schmett. p. 131 (1822?); Moore, Lepid. Ceylon, vol. ii. p. 31 (1822); Hamps. Fauna Brit. India, Moths, vol. i. p. 120 (1892).

Potidæa, Wallengr. Öfv. Vet.-Ak. Förh. xv. p. 139 (1858); Bihang, Svensk. Akad. Handl. (2) Band v. p. 17 (1865).

Ægе, Feld. Reise Novara, Lepid. iv. pl. lxxv. fig. 6 (1874).

A widely distributed genus, being found in both South and West Africa, Madagascar and the neighbouring islands, Japan, British India, Malayana, and Australia.

1. Cephonodes hylas. (Tab. V., fig. 12.)

Sphinx hylas, Linnæus, Mantissa, i. p. 539 (1771); Don. Ins. China, pl. xliii. f. 2 (1799).

Sesia hylas, Fabr. Ent. Syst. iii. I. p. 379, no. 3 (1793).

Cephonodes hylas, Hübn. Verz. bek. Schmett. p. 131 (1822?); Moore, Lep. Ceylon, vol. ii. p. 31, t. 92, figs. 4*a*, *b* (1875); Kirby, Syn. Cat. Lepid. Heteroc. vol. i. p. 627 (1892); Hamps. Faun. Brit. Ind. Moths, vol. i. p. 120, fig. 69 (1892); Dist. Ann. Mag. Nat. Hist. (6) vol. xix. p. 579 (1897).

Sphinx picus, Cram. Pap. Exot. ii. p. 83, pl. cxlviii. fig. B (1779).

Macroglossa Kingi, Macleay, in King's 'Survey Australia,' App. p. 465 (1827).

Macroglossa apus, Boisd. Faun. Ent. Madag. p. 79, pl. x. fig. 4 (1833).

Sesia cunninghami, Walk. Cat. Lepid. Heteroc. Brit. Mus. viii. p. 85 (1856).

Macroglossa cunninghami, Schauf. Nunquam Otiosus, i. p. 22 (1870).

Macroglossa hylas, Boisd. Spec. Gén. Lépid. Hétéroc. i. p. 376 (1875).

Hemaris hylas, Butl. Trans. Zool. Soc. Lond. vol. ix. p. 522 (1876).

Hemaris picus, Saalm. Lep. Madag. i. p. 117, pl. iii. fig. 40 (1884).

Larva.—*Hemaris hylas*, Butl. Trans. Zool. Soc. Lond. vol. ix. pl. xc. fig. 4 (1876).

Cephonodes hylas, Fawcett, Trans. Zool. Soc. Lond. vol. xv. p. 312, pl. xlviii. figs. 13–18 (1901).

Hab.—Transvaal; Pretoria (Distant), Johannesburg (Cregoe), Zoutpansberg (Distant).—Natal; Durban (Ross).—Also found in West Africa, Sierra Leone (Coll. Dist.); Japan; throughout India to Australia, and recorded by Hampson from the Gilbert Islands.

Col. Fawcett states that in Natal he has reared this well-known species from six different forms of larva, "which show almost every gradation, from an almost wholly green larva with white subdorsal stripes to an almost wholly black one, in which the subdorsal stripes are replaced by very dark grey ones."

In Natal the larva feeds on *Gardenia*, and also on *Kraussia lanceolata*. When ready for their transformations, the larvæ burrow underground, and there undergo their change to

* Not published at the time of going to press.

pupæ; the perfect insects emerge in from three to four weeks (Fawcett). In Japan, according to Mr. Lewis, the larva feeds on *Gardenia*, and when the perfect insect emerges from the pupa, the anterior wings are covered with yellow scales. In Ceylon the larva feeds on *Gardenia* (Thwaites).

A very common species in Pretoria, and found in most gardens.

On the Dinding Islands in the Straits of Malacca, Mr. H. W. Ridley has stated that a Reduviid Bug, *Sycanus collaris*, Fabr., is doing good work in killing the larvæ of this species. A Bug belonging to an allied genus, *Pantoleistes princeps*, Stål, is common throughout eastern South Africa, and may fulfil a similar function.

Genus MACROGLOSSUM.

Macroglossum, Scopoli, Intr. Hist. Nat. p. 414 (1776).

Macroglossa, Ochs. Schmett. Eur. iv. p. 41 (1816); Boisd. Spec. Gén. Lépid. Hétéroc. i. p. 332 (1875); Moore, Lepid. Ceylon, ii. p. 28 (1882); Hamps. Fauna Brit. India, Moths, vol. i. p. 112 (1892).

Bombylia, Hübn. Tentamen, p. 1 (1810 ?).

Psithyros, Hübn. Verz. bek. Schmett. p. 132 (1822 ?).

Rhamphoschisma, Wallengr. Öfv. Vet.-Ak. Förh. xv. p. 139 (1858); Moore, Lepid. Ceylon, ii. p. 26 (1882).

An extensive and widely distributed genus throughout the Eastern hemisphere.

2. Macroglossum trochilus. (Tab. VI., fig. 8.)

Psithyros trochilus, Hübner, Samml. exot. Schmett. ii. pl. clviii. figs. 1–4 (1806).

Macroglossa trochilus, Walk. Cat. Lepid. Heteroc. Brit. Mus. viii. p. 90 (1856); Boisd. Spec. Gén. Lépid. Hétéroc. i. p. 335 (1875); Butl. Trans. Zool. Soc. Lond. vol. ix. p. 525 (1876); Dist. Ann. Mag. Nat. Hist. (6) vol. xix. p. 579 (1897).

Rhamphoschisma trochilus, Wallengr. Bihang, Svensk. Akad. Handl. (2) Band v. p. 17 (1865).

Rhamphoschisma fasciatum, Wallengr. Öfv. Vet.-Ak. Förh. xv. p. 139 (1858).

Hab.—Transvaal; Pretoria (Distant), Johannesburg (Cregoe), Barberton (Harrison). — Common in Natal and South Africa generally.

Genus TEMNORA.

Temnora, Walker, Cat. Lepid. Heteroc. Brit. Mus. viii. p. 104 (1856); Boisd. Spec. Gén. Lépid. Hétéroc. i. p. 289 (1875).

A genus focussed in the Ethiopian Region.

3. Temnora pusillum. (Tab. V., fig. 14.)

Smerinthus pusillus, Felder, Reise d. Novara, Lepid. iv. pl. lxxxii. fig. 1 (1874).

Triptogon ? pusillus, Butl. Trans. Zool. Soc. Lond. vol. ix. p. 588 (1876).

Lophuron pusillum, Kirby, Syn. Cat. Lepid. Heteroc. vol. i. p. 642 (1892); Dist. Ann. Mag. Nat. Hist. (6) vol. xix. p. 579 (1897).

Hab.—Transvaal; Barberton (Rendall & Harrison). — Probably very widely distributed in southern Africa; I possess a specimen from Durban.

4. Temnora pylas. (Tab. VI., fig. 12.)

Sphinx pylas, Cramer, Pap. Exot. iii. p. 23, pl. ccvi. fig. A (1782).

Enyo pylas, Hübn. Verz. bek. Schmett. p. 132 (1822 ?).

Lophura brisæus, Boisd. Voy. Delegorgue, ii. p. 594 (1847); Wallengr. Bihang, Svensk. Akad. Handl. (2) Band v. p. 17 (1865).

Lophura pylas, Walk. Cat. Lepid. Heteroc. Brit. Mus. viii. p. 106 (1856); Boisd. Spec. Gén. Lépid. Hétéroc. i. p. 308 (1875); Butl. Trans. Zool. Soc. Lond. vol. ix. p. 538 (1876).

Aspledon brisæus, Boisd. Spec. Gén. Lépid. Hétéroc. i. p. 306, pl. viii. fig. 2 (1875).

Lophuron pylas, Kirby, Syn. Cat. Lepid. Heteroc. vol. i. p. 641 (1892); Dist. Ann. Mag. Nat. Hist. (6) vol. xix. p. 579 (1897).

Hab.—Transvaal; Pretoria (Zutrzenka, and Pret. Mus.), Zoutpansberg (Kaessner).—Natal; Durban (Ross), Maritzburg (Coll. Dist.).—Generally distributed throughout South Africa.

5. Temnora murina. (Tab. V., fig. 18.)

Diodosida murina, Walker, Cat. Lepid. Heteroc. Brit. Mus. viii. p. 163 (1856); Butl. Trans. Zool. Soc. Lond. vol. ix. p. 553 (1876); Kirby, Syn. Cat. Lepid. Heteroc. vol. i. p. 642 (1892); Dist. Ann. Mag. Nat. Hist. (6) vol. xix. p. 579 (1897).

Darapsa marginata var. *β*, Walk. Cat. Lepid. Heteroc. Brit. Mus. viii. p. 185 (1856).

Ocyton tyrrhus, Boisd. Spec. Gén. Lépid. Hétéroc. vol. i. p. 304 (1875).

Hab.—Transvaal; Barberton (Rendall).—Natal; Durban (Ross).

Genus SPHINGONÆPIOPSIS.

Sphingonæpiopsis, Wallengr. Öfv. Vet.-Ak. Förh. xv. p. 138 (1858).

An African genus containing a few species of small size.

6. Sphingonæpiopsis pumilum. (Tab. III., fig. 7.)

Pterogon pumilum, Boisduval, Spec. Gén. Lépid. Hétéroc. i. p. 212, pl. ix. fig. 2 (1875).

Lophuron minutum, Dist. Ann. Mag. Nat. Hist. (6) vol. xix. p. 580 (1897).

Hab.—Transvaal; Pretoria (Distant), Johannesburg (Hyde).

Apparently a late species in the Transvaal, appearing towards the end of the summer. I only saw and took one specimen during my stay in the country, and a second one I received from Johannesburg taken by Mr. J. Hyde.

7. Sphingonæpiopsis nana. (Tab. V., fig. 13.)

Lophura nana, Walker, Cat. Lepid. Heteroc. Brit. Mus. viii. p. 107 (1856); Butl. Trans. Zool. Soc. Lond. vol. ix. p. 537 (1876).

Pterogon nanum, Boisd. Spec. Gén. Lépid. Hétéroc. i. p. 314, pl. ix. fig. 3 (1875); Kirby, Syn. Cat. Lepid. Heteroc. vol. i. p. 640 (1892).

Hab.—Transvaal; Pretoria (Colls. Dist. & Pret. Mus.).—Found in Natal, and probably distributed throughout South-east Africa. I possess a specimen from Delagoa Bay (Junod).

Genus NEPHELE.

Nephele, Hübner, Verz. bek. Schmett. p. 133 (1822?); Moore, Lepid. Ceylon, ii. p. 1 (1882); Hamps. Fauna Brit. India, Moths, vol. i. p. 108 (1892).

Zonilia, Walk. Cat. Lepid. Heteroc. Brit. Mus. viii. p. 192 (1856); Boisd. Spec. Gén. Lép. Hétéroc. i. p. 139 (1875).

This genus is not only found in Africa and Madagascar, but throughout India and Ceylon. It is also recorded from Australia.

One species of *Nephele*, as found at Durban (*N. variegata*), is aberrant in its process of transformation. According to Mr. G. F. Leigh, "in almost every instance the larva spins up in the leaves and between the small branches of the fig-tree. The cocoon, too, is very thick for this species of Moth. . . . It is undoubtedly done for protective purposes, as on the few occasions when I have found a few where the ground and an exposed root of the tree has been used for pupation, the pupæ have nearly always been eaten by Ants. The Ants seem to commence the attack directly the change takes place, and when the pupa-case is soft, as I have ascertained by experiment that they will not attack a perfectly dry pupa of this Moth." *

8. Nephele vau. (Tab. V., fig. 19.)

Zonilia vau, Walker, Cat. Lepid. Heteroc. Brit. Mus. p. 197 (1856).
Zonilia Schimperi, Lucas, Ann. Soc. Ent. Fr. (3) v. p. 605, pl. xiii. fig. 1 (1857).
Zonilia Raffrayi, Oberth. Études d'Ent. iii. p. 31, pl. iii. fig. 2 (1878).
Nephele vau, Kirby, Trans. Ent. Soc. 1877, p. 239; Dist. Ann. Mag. Nat. Hist. (6) vol. xix. p. 579 (1897).

Hab.—Transvaal; Zoutpansberg (Kaessner).—Also recorded from the Congo and Abyssinia.

9. Nephele argentifera. (Tab. V., fig. 15.)

Zonilia argentifera, Walker, Cat. Lepid. Heteroc. Brit. Mus. viii. p. 194 (1856).
Nephele argentifera, Butl. Trans. Zool. Soc. Lond. vol. ix. p. 622 (1876); Kirby, Syn. Cat. Lepid. Heteroc. vol. i. p. 679 (1892).

Hab.—Transvaal; Waterval Onder (Ross).—Described from Natal. I possess an example from Delagoa Bay (Junod). Mozambique (Muir).

10. Nephele comma. (Tab. VI., fig. 10.)

Nephele comma, Hopffer, Monatsb. Acad. Berl. 1857, p. 421; Peters' Reise, Zool. v. p. 424, pl. xxvii. fig. 12 (1862); Kirby, Syn. Cat. Lepid. Heteroc. vol. i. p. 680 (1892).
Zonilia comma, Boisd. Spec. Gén. Lépid. Hétéroc. i. p. 142 (1875).
Zonilia viridescens var. γ, Walk. Cat. Lepid. Heteroc. Brit. Mus. viii. p. 193 (1856).

Hab.—Transvaal; Pretoria (Colls. Dist. and Pret. Mus.), Johannesburg (Cregoe & Hyde).—Natal; Durban (Ross).

Genus BASIOTHIA.

Basiothia, Walker, Cat. Lepid. Heteroc. Brit. Mus. viii. p. 124 (1856).

A small African genus.

11. Basiothia medea. (Tab. VI., fig. 17.)

Sphinx medea, Fabricius, Sp. Ins. ii. p. 143, n. 19 (1781).
Sphinx idricus, Drury, Ill. Nat. Hist. iii. p. 2, pl. ii. fig. 2 (1782).
Basiothia idricus, Walk. Cat. Lepid. Heteroc. Brit. Mus. viii. p. 125 (1856); Butl. Trans. Zool. Soc. Lond. vol. ix. p. 552 (1876).

* 'Entomologist,' xxxv. p. 321 (1902).

Deilephila idrieus, Boisd. Faun. Ent. Madag. p. 73, pl. x. fig. 5 (1833).
Chærocampa idræus, Guen. Notes sur l'île Réunion, Lép. p. 21 (1862).
Chærocampa idricus, Boisd. Spec. Gén. Lépid. Hétéroc. i. p. 282 (1875).
Sphinx clio, Fabr. Ent. Syst. iii. I. p. 377, n. 65 (1793).
Sphinx onothberina, Martyn, 'Psyche,' pl. xxii. figs. 58, 59 (1797).
Chærocampa transfigurata, Wallengr. Wien. ent. Monatschr. vol. iv. p. 42 (1860).
Basiothia medea, Kirby, Syn. Cat. Lepid. Heteroc. vol. i. p. 648 (1892); Dist. Ann. Mag. Nat. Hist. (6) vol. xix. p. 579 (1897).
Larva.—*Chærocampa idricus*, Fawcett, Trans. Zool. Soc. Lond. vol. xv. p. 310, pl. xlix. fig. 1 (1901).

Larva.—*Ground colour pale green; each somite, from 4th to 10th, with a pair of triangular spots, brown superiorly, yellow inferiorly, at its anterior edge. The pair of spots on 11th somite are lengthened into a brown and yellow streak, and end in the horn, which is brown, and sharp-pointed like a thorn. The pair of spots on the 4th somite are larger than the remainder, and bear on their yellow area an oval black "eye"-like spot with a white pupil near its upper edge; each spot has three minute white points on its brown area; spiracles white; a pinky-white subspiracular line, and above is a collection of brown points at each intersection of the somites. Head and claspers green, thoracic legs light brown* (Fawcett).

Hab.—Transvaal; Pretoria (Distant), Barberton (Rendall).—Natal; Durban (Ross). Delagoa Bay (Junod). Sierra Leone (Coll. Dist.).

In Natal the larva feeds on *Spermacoce natalensis*, Hochst., a common herb among the grass on the veld. Period of pupation about twenty-three days (Fawcett).

This is an abundant species at Pretoria, and one generally to be found round the electric lights during the summer season.

12. Basiothia schenki. (Tab. V., fig. 16.)

Chærocampa schenki, Möschler, Stett. Ent. Zeit. 1872, p. 339; Butl. Trans. Zool. Soc. Lond. vol. ix. p. 557 (1876).
Theretra schenkii, Kirby, Syn. Cat. Lepid. Heteroc. vol. i. p. 652 (1892); Dist. Ann. Mag. Nat. Hist. (6) vol. xix. p. 579 (1897).

Hab.—Transvaal; Pretoria (Distant), Johannesburg (Cregoe), Barberton (Rendall).—Natal; Maritzburg (Coll. Dist.).

Caught in the Transkei around the bloom of the *Plumbago* (Barrett).

Genus HIPPOTION.

Hippotion, Hübner, Verz. bek. Schmett. p. 135 (1822?); Moore, Lepid. Ceylon, ii. p. 16 (1882).

13. Hippotion cajus. (Tab. VI., fig. 11.)

Sphinx cajus, Cramer, Pap. Exot. ii. t. cxlvi. ?, fig. F (1777).
Sphinx celæno, Esp. Ex. Schmett. ii. p. 203, pl. xxviii. fig. 2 (1782).
Sphinx gordius, Stoll, Pap. Exot. iv. p. 147, pl. ccclxvii. fig. A (1782).
Xylophanes cajus, Hübn. Verz. bek. Schmett. p. 136 (1822?).
Chærocampa cajus, Boisd. Spec. Gén. Lépid. Hétéroc. vol. i. p. 245 (1875); Butl. Trans. Zool. Soc. Lond. vol. ix. p. 558 (1876); Kirby, Syn. Cat. Lepid. Heteroc. vol. i. p. 653 (1892).
Chærocampa epicles, Boisd. Spec. Gén. Lépid. Hétéroc. vol. i. p. 244 (1875).
Chærocampa celæno, Butl. Trans. Zool. Soc. Lond. vol. ix. p. 558 (1876).

Hab.—Transvaal; northern Natal frontier (Coll. Dist.).—Recorded by Butler from the Cape and Zululand; apparently distributed throughout southern Africa.

14. Hippotion eson. (Tab. V., fig. 11.)

Sphinx eson, Cramer, Pap. Exot. iii. p. 57, pl. ccxxvi. fig. C (1782).
Isoples eson, Hübn. Verz. bek. Schmett. p. 135 (1822 ?).
Deilephila eson, Boisd. Faun. Ent. Madag. p. 71 (1833).
Chærocampa eson, Walk. Cat. Lepid. Heteroc. Brit. Mus. viii. p. 137 (1856); Boisd. Spec. Gén. Lépid. Hétéroc. i. p. 232 (1875); Butl. Trans. Zool. Soc. Lond. vol. ix. p. 555 (1876).
Theretra eson, Kirby, Syn. Cat. Lepid. Heteroc. vol. i. p. 651 (1892); Dist. Ann. Mag. Nat. Hist. (6) vol. xix. p. 579 (1897).
Larva.—*Chærocampa æson*, Barrett, Ent. Month. Mag. 1900, p. 140.

"The caterpillars were of a juicy green, and had a horn on their tails" (Barrett).

Hab.—Transvaal; Barberton (Rendall).—Natal; Durban (Ross). Cape (Brit. Mus.). Pemba Island (Burtt). Sierra Leone (Coll. Dist.).

In the Transkei Miss Barrett reared this Moth from larvæ found by a neighbour on his arum lilies "in a little flower-house." Mr. Ross found the larva common at Durban, but nearly always ichneumonized.

15. Hippotion celerio. (Tab. VI., fig. 7.)

Sphinx celerio, Linnæus, Syst. Nat. i. p. 491 (1758); Cram. Pap. Exot. ii. pl. cxxv, fig. E (1777); Esp. Eur. Schmett. ii. p. 83, pl. viii. figs. 1–3, p. 176, pl. xxii. fig. 1, p. 201, pl. xxviii. fig. 1; ii. (2) p. 34, pl. xlv. fig. 3 (1779–1782); Hübn. Eur. Schmett. *Sphing.* figs. 59, 146 (1803 ?), figs. 167, 168 (1807 ?); Ochs. Schmett. Eur. ii. p. 205 (1808); Godt. Lép. France, iii. p. 43, pl. xviii. fig. 2 (1821).
Sphinx tisiphone, Linn. Syst. Nat. ii. p. 492 (1758); Mus. Ulr. p. 359 (1764).
Deilephila celerio, Steph. Ill. Brit. Ent., Haust. ii. p. 128 (1828).
Hippotion celerio et ocys, Hübn. Verz. bek. Schmett. p. 135 (1822 ?).
Deilephila albolineata, Montr. Ann. Soc. Linn. Lyon (2), xi. p. 250 (1864).
Deilephila inquilina, Harris, Ex. Eng. Ins. p. 93, pl. xxviii. fig. 1.
Hippotion celerio, Moore, Lep. Ceylon, ii. p. 16, pl. lxxxiv. fig. 4 (1882).
Chærocampa celerio, Boisd. Spec. Gén. Lépid. Hétéroc. i. p. 238 (1875); Butl. Trans. Zool. Soc. Lond. vol. ix. p. 557 (1876); Hamps. Faun. Brit. Ind., Moths, vol. i. p. 87 (1892).
Theretra celerio, Kirby, Syn. Cat. Lepid. Heteroc. vol. i. p. 652 (1892); Dist. Ann. Mag. Nat. Hist. (6) vol. xix. p. 579 (1897).

Hab.—Transvaal; Pretoria (Distant), Johannesburg (Cregoe), Barberton (Rendall).—Natal; Durban (Ross). West Africa; Sierra Leone (Coll. Dist.).—Found almost throughout the Palæarctic and Oriental Regions; through the Malayan Archipelago to Australasia.

The larva in Britain feeds on vine, Virginia creeper (*Ampelopsis hederacea*), and also sometimes on *Galium*, *Epilobium*, and *Fuchsia*.

On the island of St. Helena the larvæ are very destructive to the vines, devouring the young shoots and leaves immediately they appear in the spring months of October and November. They very quickly destroy every vestige of foliage on a large vine.*

Butler states that the examples from Australia and Fiji Islands are more brilliantly silvered than those from elsewhere.

Genus THERETRA.

Theretra, Hübner, Verz. bek. Schmett. p. 135 (1822 ?); Moore, Lepid. Ceylon, ii. p. 21 (1882).

* Mellish, 'St. Helena,' p. 181.

16. Theretra capensis. (Tab. VI., fig. 5.)

Sphinx capensis, Linnæus, Mus. Lud. Ulr. p. 349 (1764).
Thaumas capensis, Hübn. Verz. bek. Schmett. p. 138 (1822 ?).
Chærocampa capensis, Walk. Cat. Lepid. Heteroc. Brit. Mus. viii. p. 139 (1856); Boisd. Sp. Gén. Lépid. Hétéroc. i. p. 234 (1875); Butl. Trans. Zool. Soc. Lond. vol. ix. p. 555 (1876).
Eumorpha elegans C., Hübn. Samml. ex. Schmett. i. (1806 ?).
Sphinx æas, Cram. Pap. Exot. iii. p. 57, pl. ccxxvi. fig. A (1782).
Sphinx 8-maculata, Gmel. Syst. Nat. i. 5, p. 2346 (1788).
Sphinx ——, Zschach, Mus. Lesk. Ent. p. 95, t. iii. n. 183 (1788).
Theretra capensis, Kirby, Syn. Cat. Lepid. Heteroc. vol. i. p. 651 (1892); Dist. Ann. Mag. Nat. Hist. (6) vol. xix. p. 579 (1897).
Larva.—*Chærocampa capensis*, Fawcett, Trans. Zool. Soc. Lond. vol. xv. p. 308, pl. xlvii. figs. 17–18 (1901).

Larva.—*Ground colour pale green, thickly irrorated subdorsally with darker green diamond-shaped spots, from 5th to 11th somites; these spots coalesce into a series of diagonal streaks along the somites subdorsally and spiracularly. A paler green lateral stripe from 5th to 11th somite, with a dark green stripe along its upper edge; horn very short and pink; a reddish "eye"-like spot edged with white superiorly on 4th somite. Head and claspers green, thoracic legs pink; spiracles red* (Fawcett).

Hab.—Transvaal; Pretoria (Distant).—Recorded by Butler from the Cape, Natal, and Zululand.

Larva feeds on vine at Natal (Fawcett), and Cape Town (Trimen).

Mr. Trimen has observed the Cape Butcher-bird (*Lanius collaris*) taking the larvæ from the cultivated vines at Cape Town and spiking them on thorns. In the Transkei, Miss Barrett found that those that came to the orange trees at night behaved differently from the other Hawk Moths. Generally she obtained them only at dusk, and then only for a short while before they vanished again; but these *T. capensis* came late in the evening, "and were inexpressibly beautiful, glancing about among the orange flowers, their eyes like living coals." *

Genus PHRYXUS.

Phryxus, Hübner, Verz. bek. Schmett. p. 137 (1822 ?).

We only include two Transvaal species under this genus.

17. Phryxus livornica. (Tab. VI., fig. 16.)

Sphinx livornica, Esper, Ausl. Schmett. ii. p. 196 (1779); ii. (2) p. 41, pl. xlvi. figs. 3–7 (1789 ?); Hübn. Eur. Schmett. *Sphing.* ff. 65, 112 (1797–1818); Godt. Lép. France, iii. p. 40, pl. xviii. fig. 1 (1822).
Sphinx celerio, var., Esp. Ausl. Schmett. ii. p. 87, pl. viii. fig. 4 (1779).
Sphinx Kœchlini, Fuessl. Arch. Insectengesch. pl. iv. figs. 1–4; pl. xxxiii. figs. 1–5 (1781–86).
Sphinx lineata, Rossi, Faun. Etr. ii. pp. 14, 359 (1794); Ochs. Schmett. Eur. ii. p. 214 (1808).
Deilephila livornica, Steph. Ill. Brit. Ent. Haust. i. p. 126, pl. xii. fig. 1 (1828); Boisd. Spec. Gén. Lépid. Hétéroc. i. p. 172 (1875); Butl. Trans. Zool. Soc. Lond. vol. ix. p. 568 (1876); Hamps. Faun. Brit. Ind., Moths, vol. i. p. 97, fig. 55 (1892); Dist. Ann. Mag. Nat. Hist. (6) vol. xix. p. 579 (1897).

Hab.—Transvaal; Pretoria (Distant).—Widely distributed. A well-known European species; found throughout northern Africa; recorded from Aden; in British India frequenting the North-west Himalayas; also found in China.

In southern Spain, according to Rambur, the larva is almost omnivorous, and is sometimes so abundant in the plain of Malaga that hundreds might be taken along the sides

* 'Entomologists' Monthly Magazine,' 1900, p. 141.

of fields in a very short time. In North America it is modified in markings, the white line on the pronotum being duplicated, and this variety is known under the name of *P. lineata*. In Britain, although the species comes to light, it is sometimes discovered during the daytime at rest, and frequently in unlooked-for places. Mr. Lucas has searched the records, and gives the following strange spots on each of which a specimen has been found: "the pavement, a granite street-crossing, an apple-tree trunk, a fence, a door-post, a bramble-bush, a truss of straw, and a cart-rut"; all of which probably mean that the specimens were overtaken by daylight before obtaining concealment. In Britain the larva feeds on lady's bedstraw (*Galium verum*), vine, dock, and corn sow-thistle (*Sonchus arvensis*).

18. Phryxus opheltes. (Tab. VI., fig. 9.)

Sphinx opheltes, Cramer, Pap. Exot. iii. pl. cclxxxv. fig. B (1780).

Hyles opheltes, Hübn. Verz. bek. Schmett. p. 137 (1822 ?).

Deilephila mariæ, Wallengr. Öfv. Vet.-Ak. Förh. 1875, p. 93.

Deilephila opheltes, Walk. Cat. Lepid. Heteroc. Brit. Mus. viii. p. 173 (1856); Butl. Trans. Zool. Soc. Lond. vol. ix. p. 568 (1876); Kirby, Syn. Cat. Lepid. Heteroc. vol. i. p. 665 (1892); Dist. Ann. Mag. Nat. Hist. (6) vol. xix. p. 579 (1897).

Hab.—Transvaal; Lydenburg District (Zutrzenka).—Natal; Newcastle (Coll. Dist.). Cape Colony.

Genus DEILEPHILA.

Deilephila, Ochsenheimer, Schmett. Eur. iv. p. 42 (1816).

19. Deilephila nerii. (Tab. VI., fig. 6.)

Sphinx nerii, Linnæus, Syst. Nat. i. p. 490, n. 5 (1758); Cram. Pap. Exot. iii. pl. ccxxiv. fig. D (1779); Esper, Ausl. Schmett. ii. p. 43, pl. iv. figs. 1–3 (1779 ?), p. 199, pl. xxvii. figs. 1, 2 (1782 ?); Hübn. Eur. Schmett. *Sphing*. fig. 63 (1797–1803); Ochs. Schmett. Eur. ii. p. 201 (1808); Godt. Lép. France, iii. p. 12, pl. 13 (1822).

Daphnis nerii, Hübn. Verz. bek. Schmett. p. 134 (1816); Butl. Trans. Zool. Soc. Lond. vol. ix. p. 572 (1876); Moore, Lepid. Ceylon, vol. ii. p. 14, pl. lxxxiii. figs. 1, 1*a* (1882); Kirby, Syn. Cat. Lepid. Heteroc. vol. i. p. 671 (1892); Hamps. Faun. Brit. Ind., Moths, vol. i. p. 94, fig. 54 (1892); Dist. Ann. Mag. Nat. Hist. (6) vol. xix. p. 579 (1897).

Deilephila nerii, Boisd. Faun. Ent. Madag. p. 74 (1833).

Chærocampa nerii, Boisd. Spec. Gén. Lépid. Hétéroc. i. p. 224 (1875).

Var. A. *Daphnis*, L., var. *infernelutea*, Saalm. Lepid. Madag. i. p. 123 (1884).

Larva.—*Daphnis nerii*, Fawcett, Trans. Zool. Soc. Lond. vol. xv. p. 310 (1901).

"*The colour of the larva in Natal is very pale green (almost yellow) dorsally, darker below; a white lateral line with numerous small silver-white spots sprinkled over, above, and below it, the lower edge of the line is bounded by a broad light blue area extending downwards as far as the spiracles from 6th to 10th somites. On 3rd somite a pair of large, black, double-pupilled, eye-like spots, the pupils being white, surrounded by a blue and crimson iris. Habits and transformation similar to those of* Theretra capensis, *Linn.*" (Fawcett).

Hab.—Transvaal; Pretoria (Distant).—Natal; Newcastle (Coll. Dist.), Durban (Ross). A well-known European species; common to a very large area of the African continent; found at Mauritius, and throughout India and Ceylon.

In Europe the larva feeds on oleander (*Nerium oleander*) and lesser periwinkle (*Vinca minor*) (Lucas).

Genus HERSE.

Herse, Oken, 'Lehrbuch der Naturgeschichte,' t. iii. (1) p. 762 (1815).

20. Herse fulvinotata. (Tab. VI., fig. 15.)

Protoparce fulvinotata, Butler, Proc. Zool. Soc. Lond. 1875, p. 11; Trans. Zool. Soc. Lond. vol. ix. p. 606 (1877).

Protoparce mauritii, Butler, Trans. Zool. Soc. Lond. vol. ix. p. 606 (1877).

Macrosila solani, ♂, var. β et ♀, Walk. Cat. Lepid. Heteroc. Brit. Mus. viii. p. 207 (1856); Herr.-Schäff. Auss. Schmett. i. f. 206 (1854).

Phlegethontius mauritii, Kirby, Syn. Cat. Lepid. Heteroc. vol. i. p. 687 (1892); Dist. Ann. Mag. Nat. Hist. (6) vol. xix. p. 579 (1897).

Larva.—*Protoparce mauritii*, Fawcett, Trans. Zool. Soc. Lond. vol. xv. p. 311, pl. xlviii. figs. 9, 10 (1901).

Larva.—*Ground colour grass-green, under surface darker. Paired humps on 1st and 2nd somites; a purple dorsal stripe from 4th somite to horn; lateral oblique purple stripes from 4th to 10th somites; these stripes join the dorsal stripe on every somite, and are defined inferiorly by parallel narrow white oblique stripes; horn ferruginous, long, and beset with yellowish tubercles; spiracles small, red, with black centres. Head green, with vertical black stripes on the face and sides, as in larva of* A. atropos. *Thoracic legs black, claspers green* (Fawcett).

Hab.—Transvaal; Pretoria (Colls. Dist. and Pret. Mus.), Lydenburg District (Zutrzenka).—Delagoa Bay (Junod). Pemba Island (Burtt).

The larva feeds in Natal on *Duranta plumieri*, a common shrub in gardens, but which, according to Mr. Medley Wood, is included in the flora of Natal by mistake, and is most certainly not indigenous. It also feeds on *Dahlia variabilis*, an imported plant in Natal (Fawcett). Mr. G. F. Leigh, of Durban, in a note obligingly handed to me by Mr. R. South, writes that in April he found quite unexpectedly a full-fed larva of this species (and the rare brown variety) on a tomato-plant in his garden. Upon touching it, "it cried quite loudly for some time"; and again on a following morning before being killed for preservation, it "cried three or four times." The Moth Mr. Leigh has often heard "cry," but had not previously heard the sound from the larva, which he describes as like that produced by some of the local Longicorn Beetles. The cry of the Moth he compares with that of *A. atropos*.

21. Herse convolvuli. (Tab. VII., fig. 2.)

Sphinx convolvuli, Linnæus, Syst. Nat. i. p. 490, n. 6 (1758); Esper, Schmett. ii. p. 52, pl. v. (1779 ?); Hübn. Eur. Schmett. *Sphing.* fig. 70 (1797–1803); Ochs. Schmett. Eur. ii. p. 236 (1808); Godt. Lép. France, iii. p. 26, pl. xvi. (1822).

Agrius convolvuli, Hübn. Verz. bek. Schmett. p. 140 (1822 ?).

Protoparce convolvuli, Butl. Trans. Zool. Soc. Lond. vol. ix. p. 609 (1877); Hamps. Faun. Brit. Ind. Moths, vol. i. p. 103, fig. 60 (1892).

Phlegethontius convolvuli, Kirby, Syn. Cat. Lepid. Heteroc. vol. i. p. 690 (1892); Dist. Ann. Mag. Nat. Hist. (6) vol. xix. p. 579 (1897).

Hab.—Transvaal; Pretoria (Distant), Johannesburg (Cregoe), Barberton (Rendall).—Natal; Durban (Ross). Pemba Island (Burtt). — Of almost universal distribution throughout the Old World—Europe, Africa, Asia, and Malay Archipelago.

In Britain, the larva of this species feeds on *Convolvulus arvensis*, occasionally on common bindweed (*C. sepium*), and it was once found in Wales on the leaves of the wild balsam

(*Impatiens noli-me-tangere*). On the European continent it is said to feed also on *Convolvulus tricolor*, and our garden favourite (*C. major*). At Madeira it feeds on lettuce (*Lactuca sativa*). At Teneriffe on sweet potato in the fields, and on the petunia and phlox in gardens (Holt-White). By the Moth the sweet-scented white tobacco (*Nicotiana affinis*) is much frequented, and petunias are also a favourite bloom, as well as geraniums, honeysuckle, carnations, pinks, balsams, evening-primrose, and other well-known garden ornaments. In South Africa it attains only to about two-thirds of its general size in Britain; while in the Island of Tahiti Mr. J. J. Walker found it only three inches in expanse of wings (Barrett). Mr. Lucas states that this species "has been known to squeak in one instance when treated with chloroform." On the ventral side of the abdomen of the male scent-tufts, or androconia, have been observed.* A musky odour has been noticed and recorded as appertaining to the males of this species.†

Genus ACHERONTIA.

Acherontia, Ochsenheimer, Schmett. Eur. iv. p. 44 (1816); Hübn. Verz. bek. Schmett. p. 139 (1822?); Boisd. Spec. Gén. Lépid. Hétéroc. i. p. 4 (1875); Moore, Lepid. Ceylon, ii. p. 5 (1882); Hamps. Fauna Brit. India, Moths, vol. i. p. 67 (1892).

Brachyglossa, Boisd. Ind. Méth. p. 53 (1829).

22. Acherontia atropos. (Tab. VI., fig. 13.)

Sphinx atropos, Linnæus, Syst. Nat. i. p. 490, n. 8 (1758); Cram. Pap. Exot. i. pl. lxxviii. fig. A (1775); Esp. Eur. Schmett. ii. p. 69, pl. vii. (1779?); Hübn. Eur. Schmett. *Sphing.* fig. 70 (1797–1803); Ochs. Schmett. Eur. ii. p. 231 (1808); Godt. Lépid. France, iii. p. 16, pl. xiv. (1822).

Acherontia atropos, Hübn. Verz. bek. Schmett. p. 139 (1822?); Butl. Trans. Zool. Soc. Lond. vol. ix. p. 598 (1877).

Maduca atropos, Kirby, Syn. Cat. Lepid. Heteroc. vol. i. p. 700 (1892); Dist. Ann. Mag. Nat. Hist. (6) vol. xix. p. 579 (1897).

Hab.—Transvaal; Pretoria (Distant), Barberton (Rendall).—Natal; Durban (Ross). Mozambique (Muir). Sierra Leone (Brit. Mus.). Mauritius (Brit. Mus.).—Found over the whole of Europe and western Asia, and apparently throughout Africa.

Colonel Fawcett reared the larva of this Moth on a species of *Spathodia*, an imported tree which is often met with in the Berea Bush, Durban. The larva underwent its transformations on February 14th, and the imago emerged on March 17th, after a pupation of thirty-eight days. The same entomologist also reared the dark form (body uniformly fuscous, first three somites pink subdorsally) at Maritzburg on *Jasminum pubigerum*, which is also an imported plant in Natal.‡

In Natal, in 1881, a plague of the larvæ of *A. atropos* appeared among the Kafir "sweet potatoes." § In the Canary Islands a fresh crop of potatoes is planted every three months, and the caterpillars are found in small numbers all the year round.|| It is somewhat omnivorous in the choice of its food-plants, especially in Britain, where, though its food is usually the potato, yet, as Mr. Lucas has observed, "it is probably an adopted one in this

* Lucas, 'Book of British Hawk Moths,' p. 74.

† *Cf.* Girard (Bull. Soc. Ent. France, 1867, p. xlvii), and Hellins and Knaggs (Ent. Month. Mag. v. p. 206; vi. p. 166).

‡ Trans. Zool. Soc. Lond. vol. xv. p. 307 (1901).

§ 'Entomologist,' 1882, p. 10.

|| A. E. Holt-White, 'Butterflies and Moths of Teneriffe,' p. 65.

country, as there seems little reason to doubt that the Moth is indigenous. Besides the potato in Britain it sometimes feeds on the tomato (*Lycopersicum esculentum*), the thornapple (*Datura stramonium*), tea-tree (*Lycium barbarum*), woody nightshade (*Solanum dulcamara*), and the deadly nightshade (*Atropa belladonna*). Besides these, it sometimes feeds on jasmine (*Jasminum officinale*), sweet pea (*Lathyrus odoratus*), spindle-tree (*Euonymus europæus*), privet (*Ligustrum vulgare*), elder (*Sambucus nigra*), ash (*Fraxinus excelsior*), vegetable marrow (*Cucurbita Pepo-ovifera*), mock-orange (*Philadelphus coronarius*), and the trumpet-flower (*Catalpa*)."* I myself reared the larvæ at Pretoria on a variety of similar plants. Mr. Bairstow states that in South Africa the larva is variable in its food-plants, which include the leaves of the potato. In habits it is dormant by day, when it is not found on the wing, but its powers of flight must be very considerable, as it is a species frequently found on ships at a long distance from land. Two specimens are recorded as taken on the East Indiaman 'Hotspur,' two hundred and sixty miles from the coast of Portugal, after an easterly gale.†

At Port Elizabeth the species has been described as "a vine pest and a hive-robber; while by many up-country agriculturists it is held in terror and superstitious awe." ‡ Mr. Bairstow informed Miss Ormerod that in South Africa the Moth is fond of extracting the Bees' honey from their hives and nests, and he once found an apparently newly emerged female clinging with its fore legs to a Honey Bees' nest in a bush on the Zuurberg Pass. He also mentions a current belief that the action of the proboscis produces a deadly effect.§ In Campbell's 'Travels in South Africa,'‖ it is stated that the Moths steal honey, "which the Hottentots observing, in order to monopolise the honey of the wild Bees, have persuaded the colonists that it inflicts a mortal wound." It visits the hives of Bees attracted by honey, and cases are recorded in which it has been securely fastened down inside the hive and completely covered with wax by the despoiled Bees. This, however, is a rare circumstance, and has possibly only occurred when the Moth has died within the hive. My friend Dr. J. W. Stroud, one of the oldest apiarians in South Africa, has also related the depredations of this Moth in hives.¶ The Moth is said to have appeared on the Island of St. Helena in 1835, and to have been very abundant till the year 1854, when it disappeared almost simultaneously with the Honey Bee, to which it was a troublesome intruder. As many as five or six would be found in one hive feeding on the honey. The Honey Bee was reintroduced, and it is a remarkable fact that the Moth reappeared on the island in 1874, after an absence of twenty years.** Miss Barrett has recorded its presence in the nests of Bees at Transkei.††

Mrs. Monteiro states that at Delagoa Bay the larvæ are very variable in colouration, and that "they all make a tic-tic-tic noise when handled."‡‡ I reared this species myself at Pretoria, but did not notice any larval sounds. The perfect insect is well known to emit a curious sound resembling the cry of a mouse, which, as Mr. Barrett has remarked, "is readily produced by some individuals whenever touched or disturbed, though others cannot be induced

* Lucas, 'Book of British Hawk Moths,' pp. 57–8. † Proc. Zool. Soc. Lond. 1866, p. 305.

‡ S. D. Bairstow, 'The Naturalist,' n. ser. vol. ix. p. 141 (1884).

§ 'Injurious Farm and Fruit Insects of South Africa,' p. 41.

‖ 'Travels in S. Africa, undertaken at the request of the Missionary Society,' by Rev. John Campbell (1815).

¶ *Cf.* "The Honey Bee (*Apis mellifica*): Natural History and Management." Trans. East.-Prov. (S. Africa) Nat. Soc. Port Elizabeth, 1884 and 1885.

** Mellish, 'St. Helena,' p. 181. †† Ent. Month. Mag. 1900, p. 141. ‡‡ 'Delagoa Bay,' pp. 199–200.

to make it at all."* The method by which this sound is produced still requires further elucidation.† The late Prof. Moseley has given a full *resumé* of the literature bearing on the subject of the cry of this Moth,‡ and has condensed the opinions of Réaumur, Godart and Dupronchel, Passerini, Chavannes, Ghiliani, Van der Hoeven, Westmaas, and others, on the subject. Moseley came to the conclusion that "there can be no doubt that the sound is produced by expiration through the proboscis," thus inclining to the views of Passerini. The stridulation of this Moth is sometimes considered to have a terrifying influence on its enemies. Thus Poulton is of opinion that the sound is of "a warning or terrifying significance," and further remarks: "Generally speaking, any sound produced by both sexes on irritation or attack, and accompanied by theatening attitudes or movements . . . is to be interpreted, with a high degree of probability, as a warning or intimidating character."§ This, however, seems a dubious postulate. Dr. Alcock relates that he had in his aviary at Calcutta a White-cheeked Bulbul, to whom one day he offered a new-hatched imago of the larger Indian Death's-head Moth (*Acherontia lachesis*). "The Bulbul attacked it at once, and though the Moth stridulated loudly and fought vigorously, the bird never once flinched, and was soon tearing the dead body of its noisy victim to pieces."‖ Mr. Marshall, in Mashonaland, offered *A. atropos* to his Monkey (*Cercopithecus pygerythrus*), who, although exhibiting some alarm and caution, "proceeded to eat it all."¶

In the south of Ireland it is known under the local name of "Bee-robber." In German Poland the Moth is called the "Death's-head Phantom" and "Wandering Death's Bird."** Once, on its plentiful occurrence in Brittany, it created, according to Latreille, the greatest trepidation among the inhabitants, its appearance coinciding with a disastrous epidemic which they charged it with bringing, or, at least, that it came to announce the fatal malady. Among some Creoles an idea prevails that it is very dangerous, in that the dust cast from its wings in flying through a room will blind those in whose eyes it falls.†† In the New Forest in Hampshire, it is a firm belief that the Death's-head Moth "was never seen until after the execution of Charles the First."‡‡ The Rev. W. Houghton states that, according to a writer in 'Notes and Queries,' there is a quaint superstition that the Moth has been very common in Whitehall ever since that execution."§§

Genus AMBULYX.

Ambulyx, Westwood, Cab. Orient. Entomol. p. 61 (1848); Hamps. Fauna Brit. India, Moths, vol. i. p. 77 (1892).

23. Ambulyx africanus. (Tab. III., fig. 4.)

Polyptychus africanus, Distant, Ann. Mag. Nat. Hist. (7) vol. iii. p. 179 (1899).

Hab.—Transvaal; Lydenburg District (Zutrzenka).

* Lepid. Brit. Islands, vol. ii. p. 19.

† Though we may glean much from the celebrated controversy in which Réaumur (1742), Schröten (1785), T. Van der Hoeven (1859), support a proboscis-palpi theory; Roesel (1755), Ghiliani (1844), Wagner (1836), a proboscis expiration theory; Lory and Nordman (1838), the abdominal expiration theory; and Passerini (1828), Westmaas (1860), the Passerini theory (*cf.* Swinton 'Insect Variety,' p. 120).

‡ 'Nature,' vol. vi. p. 151 (1872).

‖ 'A Naturalist in Indian Seas,' p. 217.

** Badenoch, 'True Tales of the Insects,' p. 235.

‡‡ Owen, 'Forest, Field, and Fell,' p. 31.

§ Trans. Ent. Soc. Lond. 1902, p. 404.

¶ Trans. Ent. Soc. Lond. 1902, p. 402.

†† *Ibid.* p. 236.

§§ 'Sketches of British Insects,' p. 79.

Genus POLYPTYCHUS.

Polyptychus, Hübner, Verz. bek. Schmett. p. 141 (1822 ?); Hamps. Fauna Brit. India, Moths, vol. i. p. 68 (1892).

Marumba, Moore, Lepid. Ceylon, vol. ii. p. 8 (1882).

24. Polyptychus posticus. (Tab. V., fig. 17.)

Basiana postica, Walker, Cat. Lepid. Heteroc. Brit. Mus. viii. p. 237 (1856); Boisd. Spec. Gén. Lépid. Hétéroc. i. p. 50 (1875); Wallengr. Öfv. Vet.-Ak. Förh. 1875, p. 94; Kirby, Syn. Cat. Lepid. Heteroc. vol. i. p. 702 (1892).

Smerinthus Bianchii, Oberth. Ann. Mus. Genov. xviii. p. 734, pl. ix. fig. 8 (1883).

Ambulyx postica, Dist. Ann. Mag. Nat. Hist. (6) vol. xix. p. 579 (1897).

Hab.—Transvaal; Pretoria (Distant).—Natal; Durban (Gueinzius; Brit. Mus.).

Common around electric lamps during the summer season at Pretoria. Walker, quoting information received from Natal, writes, "Gives out sounds, resembling those of a *Lamia*,* for minutes together."†

25. Polyptychus piabilis. (Tab. IV., fig. 2.)

Ambulyx piabilis, Distant, Ann. Mag. Nat. Hist. (6) vol. xix. p. 580 (1897).

Hab.—Transvaal; Pretoria (Distant).

A very scarce species. I only took one (the type) during my four years' residence in Pretoria, nor did I meet with it at all at other parts of the Transvaal which I visited from time to time. Neither has it since been sent me by any of my entomological correspondents.

26. Polyptychus grayi. (Tab. VI., fig. 14.)

Smerinthus grayii, Walker, Cat. Lepid. Heteroc. Brit. Mus. viii. p. 249, n. 11 (1856); Boisd. Spec. Gén. Lépid. Hétéroc. i. p. 26 (1875).

Polyptychus grayii, Butl. Trans. Zool. Soc. Lond. vol. ix. p. 584 (1877); Dist. Ann. Mag. Nat. Hist. (6) vol. xix. p. 579 (1897).

Hab.—Transvaal; Lydenburg District (Zutrzenka).—Natal; Durban (Ross).

I am informed by Mr. A. Ross that at Durban the larva of this species feeds on *Cordia caffra* (plant determined by Mr. J. Medley Wood).

27. Polyptychus consanguineus. (Tab. III., fig. 3.)

Polyptychus consanguineus, Distant, Ann. Mag. Nat. Hist. (7) vol. iii. p. 179 (1899).

Hab.—Transvaal; Lydenburg District (Zutrzenka).

Genus LOPHOSTETHUS.

Lophostethus, Butler, Trans. Zool. Soc. Lond. vol. ix. p. 385 (1877).

28. Lophostethus dumolini. (Tab. VI., fig. 18.)

Sphinx dumolinii, Cuvier, Règne Anim. iii. pl. xx. fig. 1 (1830); Angas, Kaff. Illustr. pl. xxx. fig. 11 (1849).

* A Longicorn Beetle.

† Cat. Lepid. Heteroc. Brit. Mus. viii. p. 237 (1856).

Smerinthus dumolinii, Walk. Cat. Lepid. Heteroc. Brit. Mus. viii. p. 250 (1856); Feld. Reise Novara, Lepid. iv. pl. lxxxii. fig. 2 (1874).

Euclea dumolinii, Boisd. Spec. Gén. Lépid. Hétéroc. i. p. 15 (1875).

Lophostethus dumolinii, Butl. Trans. Zool. Soc. Lond. vol. ix. p. 585 (1877); Kirby, Syn. Cat. Lepid. Heteroc. vol. i. p. 705 (1892); Dist. Ann. Mag. Nat. Hist. (6) vol. xix. p. 579 (1897).

Larva.—*Lophostethus dumolinii*, Trimen in Weism. 'Studies in Theory of Descent,' Engl. Transl. p. 527 (1882); Fawcett, Trans. Zool. Soc. Lond. vol. xv. p. 307, pl. xlviii. fig. 7 (1901).

Larva.—*Ground colour very pale green, a pair of blue-black steely branched spines with pale yellow bases and basal areas subdorsally on each somite, from 2nd to 10th. The 1st somite has no spines, and the 11th has only one spine, thicker than the others, and replacing the horn in other species. A lateral row of smaller black spines springing from the upper edge of a spiracular row of large yellow spots; a subspiracular row of small black spines springing from lower edge of above-mentioned spots, and below these two spines placed diagonally on the 4th, 6th, 7th, 8th, and 9th somites just above the claspers; the 5th somite having three spines, and the 2nd, 3rd, and 10th somites one spine each in this series. Abdominal claspers yellow, with black extremities, each extremity bearing three short black divergent spines; anal extremity and claspers horny and rufous, with a broad black edging. Head pale green superiorly, pale ferruginous inferiorly; two black vertical stripes on the face, ending with a detached black spot above them. Sides of head black, as in the larva of* Acherontia atropos. *Thoracic legs pale ferruginous, banded with black* (Fawcett).

Hab.—Transvaal; Pretoria (Distant).

Larva feeds on *Hibiscus tiliaceus*, Linn. When full-fed, the larva burrows under ground, and forms a sort of chamber with a web, in which it undergoes its transformation. The specimens reared remained in the pupal condition from February till the following October (Fawcett). At Durban the larva feeds on *Grenia occidentalis* (A. Ross).

When in the Transvaal I found this a very difficult species to procure. I had seen a specimen in the Pretoria Museum, and determined to find it myself, but I spent three years in the quest before success attended my efforts. Even then I only obtained it by a fluke. Late one night I revisited an electric lamp which always received my attention every evening during the summer season, and on the ground at its base I picked up a lovely specimen of this long-sought Moth. Near this lamp was the home of my good friend Krüger, a close relation of the then President, and who always did what he could to assist my pursuits, for we only argued then, and had not come to fighting. He had taken a single specimen the previous night, being attracted by its size, and had duly impaled the same on a French nail, and kept it for me. These are the only two specimens I met with during four years' residence in Pretoria.

Mr. Harrison Dyar has recently minutely and exhaustively studied the larva of this species, with reference to the supposed relationship of the Saturniidæ and Sphingidæ. He concludes that this larva "is a true Sphinx, not more nearly related to the Ceratocampids than any other Sphinx, since it possesses true Sphingid tubercles, IV above V and before the spiracle, not united with V as in all the Saturnian phylum. Functionally, indeed, it is a Saturnian like the African Saturnians, with thorn-like tubercles; but the character is evidently adaptational, an irregular hypertrophy of the tubercles superimposed on the phylogenetic characters of the Sphingidæ." *

* Proc. Ent. Soc. Washington, iv. pp. 440–2 (1901).

Fam. STRIPHNOPTERYGIDÆ.

Striphnopteryges, Wallengren, Kongl. Vet.-Ak. Handl. (2), Bd. v. No. 4, p. 28 (1865).
Striphnopterygidæ, Aurivillius, Bihang, Svenska Vet.-Ak. Handl. Bd. 27, Afd. iv. No. 7, p. 3 (1901).
Eupterotidæ, Hamps. Faun. Brit. India, Moths, vol. i. pp. 9 and 41 (1892).

We here use the latest description of this family because Dr. Aurivillius has made his diagnosis sufficiently ample to embrace the Ethiopian genera :—"Proboscis absent or short and weak. Palpi hairy. Antennæ bipectinated in both sexes. Mid tibiæ with one pair of spurs; hind tibiæ usually with two pairs. The abdomen usually shorter, *never longer* than the hind wings. Anterior wing with vein 1 forked at the base, 1c absent, 5 emitted from or from above the middle between veins 4 and 6, 10 *absent or very short and emitted from* 9 *much farther from the cell than vein* 8, 11 free from the cell or rarely anastomosing first with 9 and then with 12. Posterior wing with two internal veins, vein 5 from or from above, rarely from below the middle between veins 4 and 6, vein 8 free from the base but usually connected with the cell by an oblique bar. Frenulum and retinaculum usually present in the male, often absent or rudimentary in the female, rarely absent in both sexes."

The Striphnopterygidæ, according to present knowledge, are only found in the Oriental, Ethiopian, and Palæarctic Regions, and in the last, known by only one genus.

Aurivillius divides the Striphnopterygidæ into two subfamilies :—

A. *Lower discocellular of hind wing much, usually three times longer than the middle discocellular* . . . . . **Striphnopteryginæ.**
B. *Lower discocellular of hind wing not or slightly longer, often much shorter than the middle discocellular* . . . . . **Janinæ.**

We need only mention one publication on the South African members of this family :—

Aurivillius, Chr. "On the Ethiopian Genera of the Family Striphnopterygidæ." (Bihang till k. Svenska Vet.-Akad. Handlingar, Band 27, Afd. iv. No. 7, pp. 1–33, Plates i.–v. 1901).*

STRIPHNOPTERYGINÆ.

Genus STRIPHNOPTERYX.

Striphnopteryx, Wallengren, Öfv. Vet.-Ak. Förh. 15, p. 209 (1858); Aurivill. Bihang Svenska Vet.-Ak. Handl. Band 27, Afd. iv. No. 7, p. 7 (1901).
Dreata, Walk. (part) Cat. Lepid. Heteroc. Brit. Mus. iv. p. 902 (1855).

A genus containing one South African species.

1. Striphnopteryx edulis. (Tab. VII., fig. 3.)

Bombyx edulis, Boisduval, in Delegorgue, Voy. Afr. Austr. ii. p. 599 (1847).
Dreata edulis, Walk. Cat. Lepid. Heteroc. Brit. Mus. iv. p. 903, n. 1 (1855).
Striphnopteryx edulis, Wallengr. Kongl. Vet.-Akad. Handl. (2) v. (4) p. 28 (1865); Aurivill. Bihang, Svenska Vet.-Ak. Handl. Band 27, Afd. iv. No. 7, p. 7 (1901).
Jana edulis, Kirby, Syn. Cat. Lepid. Heteroc. i. p. 800 (1902); Dist. Ann. Mag. Nat. Hist. (6) vol. xx. p. 205 (1897).

Hab.—Transvaal; Barberton (Harrison).—Natal; Durban. Cape Colony.

At Durban, "comes to light" (A. Ross, *in litt.*).

* The pagination is taken from a separate reprint.

Genus TISSANGA, nov. (Aurivillius).*

Proboscis aborted. Palpi porrect, short, not reaching beyond the frons, clothed with bristly hairs on the under side; third joint minute. Antennæ bipectinate, rather long but not reaching far beyond the middle of the cell of fore wing; their pectinations long in the male, much shorter in the female. Fore tibiæ normal, unarmed; middle tibiæ *very short and swollen, armed at the tip with two long and very stout curved claws;* hind tibiæ with *four* long spurs. Wings elongate, moderately broad. Fore wing with vein 3 from near angle of cell, 5 from below upper angle of cell, 6 free from upper angle, 7 + 8 + 9 stalked from just before upper angle, 10 absent, 11 free from cell a little before upper angle; the lower discocellular is nearly straight, and two or three times longer than the straight and erect middle discocellular. Hind wing with vein 5 much nearer to upper angle of cell, 6 and 7 separate but nearly from the same point, 8 nearly straight, connected with the cell by a very short bar just before base, and running to the apex of hind wing; lower discocellular nearly straight, at least three times longer than the middle discocellular, which is straight and somewhat oblique. Frenulum and retinaculum well developed in the male, absent in the female. Type: *Sangatissa prætoriæ*, Dist.

Tissanga agrees in neuration nearly completely with *Striphnopteryx*, Wallengr., from which genus, however, it may easily be distinguished by the structure of the middle and hind tibiæ, and the narrower, more elongate wings. From *Sangatissa*, Moore, it differs by the armature of the tibiæ, and also by the nearly straight lower discocellulars, and the well-separated veins 6 and 7 of hind wing.

2. Tissanga pretoriæ. (Tab. III., fig. 8.)

Sangatissa pretoriæ, Distant, Ann. Mag. Nat. Hist. (6) x. p. 408 (1892); *l.c.* xx. p. 205 (1897).

Hab.—Transvaal; Pretoria (Distant).—Natal (Brit. Mus.).

A scarce species; I only secured three specimens during my stay in the Transvaal.

Genus MARMAROPLEGMA.

Marmaroplegma, Wallengren, Wien. Ent. Mon. iv. p. 166 (1860); Kongl. Vet.-Akad. Handl. (2) v. (4) p. 29 (1865); Aurivill. Bihang, Svenska Vet.-Ak. Handl. Band 27, Afd. iv. No. 7, p. 7 (1901).

At present restricted to the following species.

3. Marmaroplegma paragarda. (Tab. VII., fig. 4.)

Marmaroplegma paragarda, Wallengren, Wien. Ent. Mon. iv. p. 166 (1860); Kongl. Vet.-Akad. Handl. (2) v. (4) p. 29 (1865); Aurivill. Bihang, Svenska Vet.-Akad. Handl. Band 27, Afd. iv. No. 7, p. 9 (1901).

Rhabdosia paragarda, Kirby, Syn. Cat. Lepid. Heteroc. i. p. 835 (1902); Dist. Ann. Mag. Nat. Hist. (6) vol. xx. p. 205 (1897).

Hab.—Transvaal; Pretoria (Distant; Pret. Mus.).—Natal. Caffraria.

Genus PHYLLALIA.

Phyllalia, Walker, Cat. Lepid. Heteroc. Brit. Mus. vi. p. 1494 (1855); Aurivill. Bihang, Svensk. Vet.-Ak. Handl. Bd. 27, Afd. iv. No. 7, p. 13 (1901).

Phyllalia contains four South African species, only one of which is at present known from the Transvaal.

* This diagnosis is contributed by Dr. Chr. Aurivillius.

4. Phyllalia patens. (Tab. VII., fig. 5.)

Bombyx patens, Boisduval, in Delegorgue, Voy. Afr. Austr. ii. p. 599 (1847).

Homochroa patens, Wallengr. Kongl. Vet.-Ak. Handl. (2) v. (4) p. 29 (1865); Kirby, Syn. Cat. Lepid. Heteroc. i. p. 799 (1892).

Dreata concolor, Walk. Cat. Lepid. Heteroc. Brit. Mus. iv. p. 908 (1855).

Phyllalia concolor, Walk. *loc. cit.* vi. p. 1495 (1855); Kirby, Syn. Cat. Lepid. Heteroc. i. p. 807 (1892); Dist. Ann. Mag. Nat. Hist. (6) xx. p. 205 (1897).

Phyllalia patens, Aurivill. Bihang, Svenska Vet.-Ak. Handl. Bd. 27, Afd. iv. No. 7, p. 14 (1901).

Hab.—Transvaal; Johannesburg (Hyde), Barberton (Harrison), Belfast (Fawcett), northern Natal frontier (Coll. Dist.).—Natal.—Caffraria.

In the Transkei, Miss Barrett observed many of these Moths lying dead, after a sharp wind, on the road to Nggeleni.* Col. Fawcett found the larvæ feeding on the grass of the veld, and very common at Belfast, 6500 feet elevation, in the Eastern Transvaal. He describes their hairs as having an irritating effect when handled.†

Genus POLOMA.

Poloma, Walker, Cat. Lepid. Heteroc. Brit. Mus. iv. p. 858 (1855); Aurivill. Bihang, Svenska Vet.-Ak. Handl. Bd. 27, Afd. iv. No. 7, p. 11 (1901).

A small Ethiopian genus containing three South African species, only one of which is at present known in the Transvaal.

As Aurivillius remarks, *Poloma* differs from *Phyllalia* by the almost straight lower discocellular vein of the anterior wings, and by having three or four spurs to the posterior tibiæ.

5. Poloma castanea. (Tab. VII., fig. 6.)

Poloma castanea, Aurivillius, Bihang, Svenska Vet.-Ak. Handl. Bd. 27, Afd. iv. No. 7, p. 12 (1901).

Hab.—Transvaal; Johannesburg (Hyde and Fry).—Natal; Newcastle (Coll. Dist.).

I submitted the specimen here figured to Dr. Aurivillius for comparison with his type, and he states: "Your specimen differs considerably from the type of *Poloma castanea*, but belongs, however, I think to the same species. The type wants the great blackish-brown patch at the hind margin of the fore wing, but is somewhat rubbed in this place." I did not meet with this species in the Transvaal, but Mr. J. Hyde, Jun., has recently taken a series of specimens at Johannesburg,‡ and has enriched my collection with a set of the same. Mr. Harold Fry has also kindly sent me a specimen labelled "Taken in a Johannesburg town shop window, Nov. 2, 1901."

Genus PHIALA.

Phiala, Wallengren, Wien. Ent. Mon. iv. p. 165 (1860); Kongl. Vet.-Akad. Handl. (2), v. (4), p. 33 (1865); Aurivill. Bihang, Svenska Vet.-Ak. Handl. Bd. 27, Afd. iv. No. 7, p. 15 (1901).

Heteromorpha, Herr.-Schäff. Aussereurop. Schmett. p. 11, f. 375 (1855).

About eleven species are now enumerated under this genus, all (with two exceptions from West Africa) being found in South Africa, one of which also extends its range to the Congo.

* Ent. Month. Mag. (2) vol. xii. p. 287. † Trans. Zool. Soc. xvii. p. 173 (1903).

‡ Of course, when habitats such as Pretoria or Johannesburg are given, the outside neighbourhoods are included.

6. Phiala costipunctata. (Tab. VII., fig. 7.)

Heteromorpha costipunctata, Herrich-Schäffer, Aussereurop. Schmett. f. 375 (1855).

Dasychira atomaria, Walk. Cat. Lepid. Heteroc. Brit. Mus. iv. p. 866 (1855).

Phiala xanthosoma, Wallengr. Wien. Ent. Mon. iv. p. 165 (1860); Snell. Tijdschr. Ent. vii. p. 47, pl. iv. figs. 4–6 (1872); viii. p. 124 (1873).

Dasychira punctilinea, Walk. Trans. Ent. Soc. Lond. (3), i. p. 264 (1862).

Phiala costipunctata, Kirby, Syn. Cat. Lepid. Heteroc. i. p. 446 (1892); Dist. Ann. Mag. Nat. Hist. (6) xx. p. 205 (1897); Aurivill. Bihang, Svenska Vet.-Ak. Handl. Bd. 27, Afd. iv. No. 7, p. 16 (1901).

Hab.—Transvaal; Pretoria and Pienaars River (Colls. Dist. & Pret. Mus.), Barberton (Rendall).—Also recorded from Cape Colony; Damara Land; Angola; Congo.

I took this somewhat abundant species in the months of October, November, and December. November is probably its main time for appearance on the wing, with early emergence towards end of October, and late appearance in December.

7. Phiala pulverea, sp. n.

Female. Head above and pronotum thickly clothed with very long white hairs; front of head, sternum, and abdomen ochraceous; eyes and a lateral series of spots on each side of abdomen beneath, black; legs ochraceous, the tibiæ annulated with fuscous; antennæ pale creamy-ochraceous; wings above silvery-white, thickly covered with minute blackish speckles, excepting on discoidal cell of posterior wings, where they are only present at the apex; wings beneath very pale ochraceous, speckled with blackish as above.

Fig. 6.—*Phiala pulverea.*

Female. Exp. wings, 37 to 38 millim.

Hab.—Transvaal; Pretoria (Pret. Mus. and Coll. Dist.).

I have received two female specimens of this species from Mr. Swierstra, of Pretoria. It is apparently allied to *P. dasypoda*, Wallengr., from Caffraria; but the abdomen in that species is described as white, not ochraceous as in *P. pulverea*.

8. Phiala arrecta. (Tab. IV., fig. 9.)

Phiala arrecta, Distant, Ann. Mag. Nat. Hist. (7) iv. p. 361 (1899); Aurivill. Bihang, Svenska Vet.-Ak. Handl. Bd. 27, Afd. iv. No. 7, p. 16 (1901).

Hab.—Transvaal; Lydenburg District (Krantz).

Apparently a scarce species, and one with which I never met when collecting in the Transvaal.

9. Phiala incana. (Tab. IV., fig. 8.)

Phiala incana, Distant, Ann. Mag. Nat. Hist. (6) xx. p. 205 (1897); Aurivill. Bihang, Svenska Vet.-Ak. Handl. Bd. 27, Afd. iv. No. 7, p. 16 (1901).

Hab.—Transvaal; Pretoria (Distant).

I captured one specimen of this species in January, 1895. I have neither seen nor received another specimen since that time.

10. **Phiala polita.** (Tab. IV., fig. 5.)

Phiala polita, Distant, Ann. Mag. Nat. Hist. (6) vol. xx. p. 206 (1897); Aurvill. Bihang, Svenska Vet.-Ak. Handl. Bd. 27, Afd. iv. No. 7, p. 16 (1901).

Hab.—Transvaal; Barberton (Rendall).

A single specimen of this beautiful species was taken by Dr. Rendall in December, 1893. I did not meet with it myself when collecting at Barberton, nor have I seen another specimen.

11. **Phiala flavipennis.** (Tab. VII., fig. 8.)

Phiala flavipennis, Wallengren, Öfv. Vet.-Ak. Förh. xxxii. (1), p. 98 (1876); Aurivill. Bihang, Svenska Vet.-Ak. Handl. Bd. 27, Afd. iv. No. 7, p. 16 (1901).

Hab.—Transvaal; Pretoria (Coll. Dist.).—Originally described by Wallengren from the Transvaal.*

JANINÆ.

Genus HEMIJANA.

Hemijana, Aurivillius, Bihang, Svenska Vet.-Ak. Handl. Bd. 27, Afd. iv. No. 7, p. 21 (1901).

A small genus, at present containing but one species.

12. **Hemijana subrosea.** (Tab. VII., fig. 9.)

Jana ? subrosea, Aurivillius, Ent. Tidskr. 1895, p. 209; Dist. Ann. Mag. Nat. Hist. (6) xx. p. 205 (1897).
Hemijana subrosea, Aurivill. Bihang, Svenska Vet.-Ak. Handl. Bd. 27, Afd. iv. No. 7, p. 22, pl. iii. fig. 3 (1901).

Hab.—Transvaal; Pretoria (Distant; Pret. Mus.).—Originally described from Natal.

This is an early summer species; I took it at light in the month of October.

Genus JANA.

Jana, Herrich-Schäffer, Aussereurop. Schmett. i. pp. 17, 18 (1855); Walk. Cat. Lepid. Heteroc. Brit. Mus. iv. p. 909 (1855); Aurivill. Bihang, Svenska Vet.-Ak. Handl. Bd. 27, Afd. iv. No. 7, p. 22 (1901).

Less than a dozen species of this Ethiopian genus have at present been described, and these principally from West Africa.

13. **Jana eurymas.** (Tab. VII., fig. 10.)

Jana eurymas, Herrich-Schäffer, Aussereurop. Schmett. i. t. xxi. f. 98 (1854); Dist. Ann. Mag. Nat. Hist. (6) vol. xx. p. 205 (1897); Aurivill. Bihang, Svenska Vet.-Ak. Handl. Bd. 27, Afd. iv. No. 7, p. 24 (1901).

Hab.—Transvaal; Pretoria (Distant).—Recorded from Natal. West Africa; Cameroon District, Ogove.

I captured my specimens at Pretoria in the month of November.

* The Transvaal collection described by Wallengren, is not, as Dr. Aurivillius has informed me, contained in the Stockholm Museum, but forms part of the collection of a small museum at Malmö, in the most southern part of Sweden.

Genus HOPLOJANA.

Hoplojana, Aurivillius, Bihang, Svenska Vet.-Ak. Handl. Bd. 27, Afd. iv. No. 7, p. 24 (1901).

A genus apparently confined to South-east and East Africa. Three species have been described, only one of which is at present known from the Transvaal.

14. Hoplojana rhodoptera. (Tab. VII., fig. 11.)

Jana rhodoptera, Gerstaecker, Archiv f. Naturg. xxxvii. p. 361 (1871); V. d. Decken's Reise iii. 2, p. 381, pl. xvi. f. 3 (1873); Dist. Ann. Mag. Nat. Hist. (6) vol. xx. p. 205 (1897).

Hoplojana rhodoptera, Aurivill. Bihang, Svenska Vet.-Ak. Handl. Bd. 27, Afd. iv. No. 7, p. 25 (1901).

Hab.—Transvaal; Barberton (Rendall).—German and British East Africa.

Taken in the month of December at Barberton. It will probably also be found in Natal, where so many other East African species have lately migrated through the thickly wooded coast region.

Genus PHASICNECUS.

Phasicnecus, Butler, Proc. Zool. Soc. Lond. 1894, p. 585; Aurivill. Bihang, Svenska Vet.-Ak. Handl. Bd. 27, Afd. iv. No. 7, p. 28 (1901).

A moderately small genus confined to tropical and subtropical Africa.

Three species are here enumerated and figured.

15. Phasicnecus subcroceus, sp. n. (Tab. VII., fig. 12.)

Male. Head and pronotum somewhat dark ochraceous; abdomen, body beneath, and legs much paler ochraceous; antennæ and eyes black; anterior wings above somewhat dark ochraceous, the costal margin and fringe croceous, and crossed by two transverse fuscous linear fasciæ, the first near middle outwardly oblique but inwardly recurved on costal area, the second between first and outer margin, oblique and terminating on outer margin a little before apex; posterior wings croceous, abdominal area with three piceous spots, of which the two lower are most distinct; both wings beneath uniformly croceous.

Male. Exp. wings, 52 millim.

Hab.—Transvaal; Pretoria (Zutrzenka).

16. Phasicnecus evanescens, sp. n.

Fig. 7.—*Phasicnecus evanescens.*

Male. Body above fulvous; head, body beneath, and legs croceous; antennæ with the pectinations greyish; anterior wings above fulvous with almost obliterated transverse linear fasciæ, the first practically obsolete and not anteriorly recurved, the second a little more distinct, and directed as in *P. subcroceus;* posterior wings croceous without black spots on abdominal area; both wings beneath uniformly ochraceous.

Male. Exp. wings, 45 millim.

Hab.—Transvaal; Lydenburg District (Krantz).

A species allied to *P. subcroceus* by the length of the anterior wings, the colour of which is fulvous not ochraceous, with the transverse fasciæ almost obliterated, and the inner fascia not anteriorly recurved; colour of antennæ also different.

17. Phasicnecus obtusus.

Poloma obtusus, Walker, Cat. Lepid. Heteroc. Brit. Mus. xxxii. p. 357 (1865).
Stenoglene obtusa, Kirby, Syn. Cat. Lepid. Heteroc. i. p. 809 (1892); Dist. Ann. Mag. Nat. Hist. (6) xx. p. 205 (1897).
Stenoglene tristis, Feld. Reise Novara Lep. iv. t. xcv. f. 4 (1874).
Messata tristis, Kirby, Syn. Cat. Lepid. Heteroc. i. p. 809 (1892).
Phasicnecus obtusus, Aurivill. Bihang, Svenska Vet.-Ak. Handl. Bd. 27, Afd. iv. No. 7, p. 30 (1901).

Allied to the two preceding species, but with the anterior wings distinctly longer and pale castaneous above, with the transverse fasciæ as in *P. subcroceus*; posterior wings ochraceous, and shaded with pale castaneous towards abdominal area; both wings beneath uniformly reddish-ochraceous; antennæ with the under surface and pectinations more or less creamy white, *not black*.

Exp. wings, 57 to 60 millim.

Hab.—Transvaal; Pretoria (Distant).

Fig. 8.—*Phasicnecus obtusus.*

I found this species on the wing in the month of December.

Fam. CHRYSOPOLOMIDÆ.

Chrysopolomidæ, Aurivillius, Entomologisk Tidskrift, 1895, p. 116; Hamps. Cat. Lepid. Phalænæ, vol. i. p. 19 (1898).

This is a small family of Ethiopian Moths, founded by Aurivillius on the genus *Chrysopoloma*, to which Druce had ascribed several species. This genus was sunk by Kirby in his Catalogue as a synonym of *Stenoglene*, Feld., an error which I unfortunately followed in some of my specific descriptions. Aurivillius has included two genera in this family—*Chrysopoloma*, found in the Transvaal, and *Ectropa*, Wallengr., founded on a Caffrarian species *E. ancilis*, not yet found within our faunistic limits.

The principal publications on the South African Chrysopolomidæ are:—

Aurivillius, Chr. "Diagnosen neuer Lepidopteren aus Afrika." (Entomol. Tidskr. 1895, p. 116.)
Druce, H. "Descriptions of some New Species of Heterocera from Tropical Africa." (Proc. Zool. Soc. 1886, p. 410.)

Genus CHRYSOPOLOMA.

Chrysopoloma, Druce, Proc. Zool. Soc. Lond. 1886, p. 410 (*ined.*); Aurivill. Entomol. Tidskr. 1895, p. 117.
Stenoglene part, Kirby, Syn. Cat. Lepid. Heteroc. vol. i. p. 809 (1892).

This genus is found throughout tropical and subtropical Africa, but the number of species it comprises is still uncertain. Some may probably be described under other genera, while others certainly await description.

1. Chrysopoloma isabellina. (Tab. VIII., fig. 1 ♂.)

Chrysopoloma isabellina, Aurivillius, Entomol. Tidskr. 1895, p. 119. ♂.
Chrysopoloma similis, Aurivill. *loc. cit.* ♀.
Stenoglene isabellina, Dist. Ann. Mag. Nat. Hist. (6) vol. xx. pp. 205 and 206 (1897).

Hab.—Transvaal; Pretoria (Colls. Dist. and Pret. Mus.).—Natal; German East Africa.

The female resembles the male, but is a little larger, and without the white black-margined spot to the anterior wing.

2. **Chrysopoloma bicolor.** (Tab. VIII., figs. 2♂, 3♀.)

Stenoglene bicolor, Distant, Ann. Mag. Nat. Hist. (6) vol. xx. p. 206 (1897). ♀.

Male. *Much darker than female; anterior wings infuscated on upper apical area, and with a white black-margined spot at apex of discoidal cell; posterior wings castaneous, the fringe and some basal suffusions ochraceous; wings beneath ochraceous, the white spot to the anterior wings above, subobsolete beneath.*

Hab.—Transvaal; Pretoria, Pienaars River (Distant).

I found this species on wing in the month of November, and at light. My original description was made from female specimens only, but I have since received a male from Pretoria, which is here figured.

3. **Chrysopoloma varia.** (Tab. VIII., fig. 4♂.)

Chrysopoloma varia, Dist. Ann. Mag. Nat. Hist. (7) vol. iv. p. 362 (1899).

Hab.—Transvaal; Pretoria (Coll. Dist.).—Delagoa Bay (Muir).

A variable species, sometimes with a distinct oblique linear piceous fascia crossing anterior wings a little beyond middle; in other specimens with many of the spots obliterated.

I have not seen the female.

4. **Chrysopoloma restricta.** (Tab. VIII., fig. 5♂.)

Chrysopoloma restricta, Distant, Ann. Mag. Nat. Hist. (7) vol. iv. p. 362 (1899).

Hab.—Transvaal; Lydenburg District (Coll. Dist.).

I have only received the male of this species.

Fam. NOTODONTIDÆ.

Bombycites, div. *Legitimæ* (part), Latreille, Gen. Crust. et Ins. iv. p. 217 (1809).

Dimorphæ (part), *Ptilodontes*, *Andriæ*, and *Melalophæ*, Hübn. Verz. bek. Schmett. pp. 145, 147, 162 (1822?).

Notodontidæ, Stephens, Ill. Brit. Ent. Haust. ii. p. 10 (1828); Hamps. Fauna Brit. India, Moths, vol. i. p. 124 (1892); Packard, Mem. Nat. Acad. Sci. vol. vii. p. 87 (1895).

The original family characters, as given by Stephens, are as follows:—"*Palpi more or less evident, two, rarely four, in number, sometimes elongate, very hairy: maxillæ usually distinct, not spiral, resembling two slender filamentous processes. Antennæ moderate, more or less bipectinated, especially in the males, or setaceous, frequently serrated or ciliated in the females; body not very stout, the apex of the males tufted; wings deflexed, entire. Males smaller than the females. Larva sparingly covered with hairs, or naked, greatly diversified in form, frequently with one or more elevated tubercular appendages, the two anal legs sometimes converted into a furcate tail; pupa often folliculated, sometimes subterranean.*"

To this may be added Hampson's description of the venation:—"*Fore wing with* 1*a*

forming a fork with 1*b at the base;* 1*c absent; vein* 5 *from the middle of discocellulars, or rarely from just below upper angle of cell.* Hind wing with two internal veins; vein* 5 *from the centre of the discocellulars or rarely absent;* 8 *free from the base, curved, and running close along the subcostal nervure, or joined to it by a bar.*"

Packard, in dealing with the Nearctic Notodontidæ, remarks, "the larvæ of this family vary greatly in form and ornamentation for a group of such moderate numbers"; and in a synopsis he enumerates fifteen distinct larval characteristics.† The same impression has been stated by Weismann: "In fact, in the whole order Lepidoptera there can scarcely be found associated together such diverse larvæ as are here placed in one imago-family."‡

As regards the food-plants of the South African species, there is still much to be recorded. According to Packard, from what is known of the life-histories of the Californian and Campestrian Notodontians, their principal food-plants in that region are the poplars and willows found along the river-courses of that dry area; others feeding on the scrub oaks of the plains and foot-hills.

Edw. Newman proposed a tribe, or division, which equalled this family, under the name Cuspidates "(in science *Cuspidatæ*), from the singular form of the caterpillars, which frequently end in a sharp point"; but, as he further remarks, "in this, as in many other instances, the name of the division does not strictly apply to all of the contents of the division."§ Some have gone under the name of "Prominents," owing to the larvæ being usually without prolegs on the hindmost segment, which is thus carried erect.

There had long been an opinion that some of the grotesque attitudes of these larvæ possessed a protective signification. Under the genus *Cerura* (p. 92) we have recorded the observation of a distinguished entomologist, that those larvæ represent the Puff-Adder among the Bombycine caterpillars, as the larvæ of *Chærocampa* do among those of the Sphingidæ. Hermann Müller has made similar suggestions as to the larvæ of another well-known European Notodont, *Stauropus fagi*. When sitting on a twig in its natural position, the head and first five segments are held erect, and the greatly lengthened legs of the second and third segments held outstretched; thus, when seen from the front, the whole aspect of the insect, both in form and colour, is most Spider-like, and when alarmed it immediately raises its four long legs and moves them irregularly, after the manner of a Spider attacking its victim. This Spider-like appearance is further suggested as a special protection against ichneumons, which, according to the experience of H. Müller, are particularly afraid of Spiders, while Fleddermann, an experienced breeder of insects, never found the larva of *S. fagi* to be attacked by ichneumons. When observed from the rear, there is nothing to be seen but the erect, hard, shield-like surface of the last segment surmounted by two black horns, and presenting an appearance totally unlike that of a caterpillar.‖ Müller even found a further suggestion, when observing on the side view of the larvæ a small depression just below the spiracles on the fourth and fifth segments, which gives the appearance of a caterpillar which has been stung by an ichneumon. This suggestion has been adopted by Poulton as "another form of mimetic resemblance—the

* Except in *Cyphanta*, an Indian genus.

† Mem. Nat. Acad. Sci. vol. vii. p. 23 (1895).

‡ 'Studies in the Theory of Descent,' Eng. transl. p. 443.

§ 'British Moths,' p. 204.

‖ 'Kosmos,' Nov. 1879, p. 123, and Proc. Ent. Soc. Lond. 1880, p. 111.

deceptive appearance of the traces left by an enemy suggesting that the larva is already occupied." * Birchall has been prompted to other reflections and suggestions: "When feeding, the long legs are protruded, and the anal segments being elevated, its likeness to a great Earwig, or *Staphilinus*, is very striking, and probably may give it some security from the attacks of enemies"; but, as this good lepidopterist further remarks: "I desire to speak doubtfully of the sharp eyes of a bird, or ichneumon, being deceived when engaged in its own special business by any such colourable imitation." † Mr. Barrett considers that the young larva looks almost like a long-legged Ant, and when full grown, and feeding, it has a singular likeness to a great Earwing, or brown Rove Beetle.‡ From the singular aspect of the larva, Albin termed it the Lobster Caterpillar, a name which has since been applied to the imago.§ Of the larva of *Cerura vinula*, our Puss Moth, which, when disturbed, withdraws its head into the first body ring, inflating the margin, which is of a bright red colour, Poulton has likened the effect to an "intensely exaggerated caricature of a vertebrate face, which is probably alarming to the vertebrate enemies of the caterpillar"; and adds somewhat definitely, "The terrifying effect is therefore mimetic."|| He has also suggested that the two whips which are protruded from the prongs of the fork in which the body terminates "might be thought to be stings." ¶ It will thus be seen that the larvæ of this family have afforded ample material for speculation and hypothesis, and these quotations will doubtless stimulate other observations—qualifying or corroborative—in South Africa.

The Notodonts are extremely sluggish in their habits by day, and conversely active when darkness sets in. This can be easily seen when these Moths are confined during the day in an ordinary box, the artificial darkness inciting the greatest activity.

Principal bibliographical references relating to the Notodontidæ of South Africa:—

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Distant, W. L. "On a Collection of Heterocera made in the Transvaal (Notodontidæ)." (Ann. & Mag. Nat. Hist. (6) vol. xx. p. 204 (1897); *ibid.* (7) vol. iii. p. 463 (1899); *ibid.* vol. iv. p. 361 (1899).)

And for general information:—

Packard, Alpheus S. "Monograph of the Bombycine Moths of America north of Mexico, including their transformations and origin of the larval markings and Armature. Part I.—Fam. I. Notodontidæ." ('Memoirs of the National Academy of Sciences,' vol. vii. pp. 1–291, plates i.–xlix. (1895).)

Genus DESMEOCRÆRA.

Desmeocræra, Wallengren, Kongl. Vet.-Ak. Handl. (2) Bd. v. No. 4, p. 52 (1865).

A small genus apparently confined to Southern Africa.

1. Desmeocræra hierax. (Tab. IV., figs. 3♂, 4♀.)

Desmeocræra hierax, Distant, Ann. Mag. Nat. Hist. (6) vol. xx. p. 204 (1897).

Hab.—Transvaal; Pretoria (Distant and in Pret. Mus.); Lydenburg District (Zutrzenka).

I found this species on the wing in October, and coming to light.

* 'The Colours of Animals,' p. 282.

‡ Lepid. Brit. Islands, vol. iii. pp. 101 and 103.

|| 'The Colours of Animals,' p. 271.

† Ent. Month. Mag. xiii. p. 232 (1877).

§ *Cf.* Stephens' Ills. Brit. Ent. Haust. ii. p. 22 (1828).

¶ Proc. Zool. Soc. 1887, p. 206.

2. **Desmeocræra vernalis.** (Tab. IV., fig. 1.)

Desmeocræra vernalis, Distant, Ann. Mag. Nat. Hist. (6) vol. xx. p. 205 (1897).

Hab.—Transvaal; Barberton (Rendall), Lydenburg District (Pret. Mus.).

3. **Desmeocræra basalis.** (Tab. IV., fig. 14.)

Desmeocræra basalis, Distant, Ann. Mag. Nat. Hist. (7) vol. iv. p. 361 (1899).

Hab.—Transvaal; Lydenburg District (Colls. Dist. and Pret. Mus.).

Both sexes are very similar in markings.

Genus PHALERA.

Phalera, Hübner, Verz. bek. Schmett. p. 147 (1822 ?); Hamps. Fauna Brit. India, Moths, vol. i. p. 133 (1892).

A somewhat large genus widely distributed. It is found throughout the Palæarctic region, as far as China and Japan; not uncommon in India and Burma, and now recorded from the Transvaal.

4. **Phalera lydenburgi.** (Tab. IV., fig. 12 ♀.)

Phalera lydenburgi, Distant, Ann. Mag. Nat. Hist. (7) vol. iii. p. 463 (1899).

Hab.—Transvaal; Lydenburg District (Colls. Dist. and Pret. Mus.).

Genus ANAPHE.

Anaphe, Walker, Cat. Lepid. Heteroc. Brit. Mus. iv. p. 856 (1855); Walsingh. Trans. Linn. Soc. Lond. (2) ii. p. 421 (1885).
Arctiomorpha, Herr.-Schäff. Aussereurop. Schmett. i. p. 11 (1855).
Henosis, Wallengr. Kongl. Vet.-Ak. Handl. (2) Bd. v. No. 4, p. 51 (1865).

A genus confined to tropical and subtropical Africa.

For a knowledge of this interesting genus and its peculiar larval arrangements we are indebted to the late Col. J. H. Bowker and Lord Walsingham. On July 4th, 1883, Col. Bowker forwarded a small box containing a nest of the "Congregating Moth" (*Anaphe panda*, Boisd.*) from Natal. He wrote:—"The larvæ are most interesting, often denuding a tree of its foliage; they move in a body, sometimes ten or even twenty yards long, in search of 'pastures new,' and when the time comes, form into a cluster, and form the nest covered with a brown silk. . . . The natives use the silk for medical purposes, somewhat as we use oiled silk." The box reached England and Lord Walsingham at the beginning of August, and the larvæ were alive and apparently healthy. Many of them remained in the so-called nest, but bodies of from twenty to forty constantly came out and moved about, always keeping close to it. They moved in a closely packed mass, following a slightly curved line, much in the same position as that in which the small cocoons were ultimately seen to be arranged in the interior of the large one. On the 9th of August the nest was sent to the Insectarium of

* A species not yet recorded from the Transvaal, but almost certain to be found there.

a.

b.

Fig. 9.—Enveloping Cocoon of *Anaphe panda*: *b*, inside view; *a*, outside. About half natural size.—From the Trans. Linn. Soc. Lond.*

the Zoological Society's Gardens, in Regent's Park, where they remained under careful attention until about the middle of March, when about two hundred and fifty Moths had emerged from the large cocoon; the first on December 3rd, the last on February 14th. The dead leaves attached to the nest enabled the identification of the food-plant to be made as *Bridelia micrantha*, Baillon. The larvæ did not finally enclose themselves in the large cocoon until about a fortnight after they reached the Insectarium, so that they must have been about fifty days without food. The emergence of the Moths was also followed by the appearance of a number of dipterous parasites, which were stated to be closely allied to *Tachina onchestus*, Walk.

5. Anaphe reticulata. (Tab. VIII., fig. 6.)

Anaphe reticulata, Walker, Cat. Lepid. Heteroc. Brit. Mus. iv. p. 856 (1855); Walsingh. Trans. Linn. Soc. Lond. (2) ii. p. 422 (1885); Dist. Ann. Mag. Nat. Hist. (6) vol. xx. p. 204 (1897).

Arctiomorpha euprepiæformis, Herr.-Schäff. Aussereurop. Schmett. fig. 434 (1856).

Hab.—Transvaal; Pretoria (Distant), Johannesburg (Ross and Cregoe).—Originally described from Natal specimens.

I found this species on wing at Pretoria in the months of November and December. It is not uncommon, and comes freely to the electric lights.

* For the permission to reproduce these figures, I am indebted to the Council of the Linnean Society and to Lord Walsingham.

Genus RIGEMA.

Rigema, Walker, Cat. Lepid. Heteroc. Brit. Mus. v. p. 1079 (1855).

Recorded from Western and Southern Africa and Madagascar. Walker has also doubtfully included a species from Australia which will probably find a place in another genus.

6. Rigema woerdeni. (Tab. VIII., fig. 8.)

Phalera woerdeni, Snellen, Tijdschr. Ent. xv. p. 45, t. iv. figs. 1–3 (1872); Dist. Ann. Mag. Nat. Hist. (6) vol. xx. p. 204 (1897).

Hab.—Transvaal; Pretoria (Distant), Lydenburg District (Pret. Mus.).—West Africa; Lower Guinea (*fide* Snellen).

I captured this species at Pretoria in the month of January.

7. Rigema ornata. (Tab. VIII., fig. 9.)

Rigema ornata, Walker, Cat. Lepid. Heteroc. Brit. Mus. xxxii. p. 437 (1865); Dist. Ann. Mag. Nat. Hist. (6) vol. xx. p. 204 (1897).

Hab.—Transvaal; Pretoria (Distant), Waterberg District (Wilde).—Natal; Newcastle (Coll. Dist.). Transkei (Barrett).

Miss Barrett, in the Transkei, obtained a female specimen in the month of November, which deposited pink eggs "with a depression at the top," but which turned quite blue before hatching. "The caterpillars at first were little black dots, which hung themselves by a thread, or scrambled so about the place that I found them all over the work-table, just escaped from the glass which held the eggs." Difficulty was experienced in discovering the right food for these larvæ; but one full grown was subsequently discovered on coarse grass by the riverside.*

8. Rigema aurifodinæ. (Tab. VIII., fig. 7.)

Rigema aurifodinæ, Distant, 'Entomologist,' xxxv. p. 213 (1902).

Hab.—Transvaal; Pretoria (Swierstra), Johannesburg (Hyde).

I did not meet with this species during four years' collecting in Pretoria and other parts of the Transvaal. I have since received it, and almost simultaneously, from Mr. Swierstra, of Pretoria, and Mr. J. Hyde, Jun., of Johannesburg.

Genus ANTHEUA.

Antheua, Walker, Cat. Lepid. Heteroc. Brit. Mus. iii. p. 766 (1855); Hamps. Fauna Brit. India, Moths, vol. i p. 145 (1892).

Sirenopyga, Wallengr. Öfv. Vet.-Ak. Förh. xv. p. 210 (1858).

A genus common to tropical and subtropical Africa, British India and Ceylon, and Java.

9. Antheua simplex. (Tab. VIII., fig. 11.)

Antheua simplex, Walker, Cat. Lepid. Heteroc. Brit. Mus. iii. p. 766 (1855); Dist. Ann. Mag. Nat. Hist. (6) vol. xx. p. 204 (1897).

Sirenopyga ephippiata, Wallengr. Wien. Ent. Monatschr. iv. p. 164, 1860; Kongl. Vet.-Ak. Handl. (2) Bd. v. No. 4, p. 52 (1865).

* Ent. Month. Mag. 1902, p. 124.

Hab.—Transvaal; Pretoria (Distant, Zutrzenka, and Pret. Mus.).—Probably distributed throughout South-east Africa.—British East Africa (Betton).

Always a scarce species; I have only seen three specimens from Pretoria, as detailed above.

10. Antheua spurcata. (Tab. VIII., fig. 10.)

Antheua spurcata, Walker, Cat. Lepid. Heteroc. Brit. Mus. xxxi. p. 298 (1864).

Hab.—Transvaal; Pretoria (Coll. Dist.), Barberton (Rendall).—West Africa; Sierra Leone.

11. Antheua tricolor, var. (Tab. VIII., fig. 13.)

Antheua tricolor, Walker, Cat. Lepid. Heteroc. Brit. Mus. iii. p. 688 (1855); Feld. Reise d. Novara, Lepid. iv. pl. xciv. fig. 7 (1874).

Antheua varia, Walk. Cat. Lepid. Heteroc. Brit. Mus. iii. p. 766 (1855).

Hab.—Transvaal; Waterval-onder (Ross).—Natal.

12. Antheua consanguinea, sp. n. (Tab. VIII., fig. 12.)

Female. Head and pronotum pale ochraceous, tinged with fulvous; abdomen above brownish ochraceous with a double series of lateral marginal spots, the innermost piceous, the outermost, scarcely seen from above, shining black; sternum, legs, and abdomen beneath pale ochraceous; anterior wings primrose-yellow, with two basal fused spots, a three-angulated longitudinal spot beneath apical area of cell, costal margin, and outer fringe, both very narrowly, pale purplish brown; posterior wings pale purplish brown, the fringe and basal area primrose-yellow; wings beneath very pale ochraceous, and almost unicolorous.

Exp. wings, 45 millim.

Hab.—Transvaal; Lydenburg District (Krantz).

Allied to the eastern species, *A. servula*, Drury, found throughout British India and Java.

Genus CERURA.

Cerura, Schrank, Fauna Boica, ii. 2 Abth. p. 155 (1802); Hamps. Fauna Brit. India, Moths, vol. i. p. 155 (1892); Pack. Mem. Nat. Acad. Sci. vii. p. 263 (1895).

Harpyia, Ochsenh. Eur. Schmett. iii. p. 19 (1810); Moore, Lepid. Ceylon, ii. p. 108 (1883).

A large and widely distributed genus. Found in North America; distributed throughout Europe to China and Japan; found in India and Ceylon; Australia; Algeria in North Africa; and now recorded from the Transvaal in South Africa.

Some species of *Cerura* have a very disguised appearance when at rest. Of the British species, *C. furcula*, Mr. Barrett writes: "In the daytime it sits on the trunk, or more usually on a branch of one of its food-trees, its outstretched downy legs and grey markings giving it a most deceptive likeness to an entangled downy feather, or even a more close resemblance to a ripe sallow catkin from which the downy seeds are bursting." * The larva of another species found in Britain, *C. vinula*, can "squirt a fluid—formic acid—when handled." †

Of these peculiar larvæ, Packard has remarked, they "have varied in the direction of the enlargement of the prothoracic segment to form a sort of hood to admit the head, serving to

* 'The Lepidoptera of the British Islands,' vol. iii. p. 89.

† Prof. Poulton has most elaborately described the organs which emit, and the method of emission. (Trans. Ent. Soc. 1887, p. 295.)

make a visage calculated to frighten away any assailant. It is the Puff-Adder among the Bombycine caterpillars, as the larva of *Chærocampa* is among Sphingid larvæ." *

13. **Cerura spiritalis.** (Tab. IV., fig. 13.)

Cerura spiritalis, Distant, Ann. Mag. Nat. Hist. (7) vol. iii. p. 464 (1899).

Hab.—Transvaal; Lydenburg District (Krantz).

14. **Cerura swierstræ.** (Tab. VIII., fig. 20.)

Cerura swierstræ, Distant, 'Entomologist,' xxxv. p. 213 (1902).

Hab.—Transvaal; Pretoria (Swierstra), Johannesburg (Cregoe).

MELEBÆAS, gen. nov.

Palpi short and porrect; anterior wings in male at least, very long, each wing much longer than the body; anterior wings with vein 5 given off just below the angle of the cell; in both wings veins 3 and 4 well separated at their bases, not with an almost common origin at lower apex of cell as in *Hoplitis*. Type: *M. gigas*, Dist.

Only one species at present described. I originally placed it in the genus *Hoplitis*, from which it differs in venation as above, and also by the great length of the anterior wings in male.

15. **Melebæas gigas.** (Tab. IV., fig. 6.)

Hoplitis gigas, Distant, Ann. Mag. Nat. Hist. (7) vol. iii. p. 463 (1899).

Hab.—Transvaal; Lydenburg District (Krantz).

Genus CHADISRA.

Chadisra, Walker, Trans. Entomol. Soc. (iii.) vol. i. p. 81 (1862); Hamps. Fauna Brit. India, Moths, vol. i. p. 159 (1892).

A genus hitherto restricted to British India, but one which—on the authority of Sir Geo. Hampson—also comprises the following species.

16. **Chadisra bicolor.** (Tab. IV., fig. 10.)

Chadisra bicolor, Distant, Ann. Mag. Nat. Hist. (7) vol. iv. p. 360 (1899).

Hab.—Transvaal; Pretoria (Coll. Dist.).

POLIENUS, gen. nov.

Palpi porrect, hairy; antennæ obscurely pectinate for about basal half, setaceous; anterior wings about as long as the body in both sexes, vein 4 from lower angle of cell, vein 5 from middle of cell, vein 6 from just before end of cell, and near 7 which emerges at upper end of cell, both connected with a short oblique vein, 8 bifurcating from 9 a little before apex, the last bifurcating from 10 at about half its length; posterior wings with veins 6 and 7 stalked, bifurcating at a short distance from upper end of cell.

Apparently allied to the Indian genus *Ramesa*.

* Mem. Nat. Acad. Sci. vii. p. 31 (1895).

Polienus modestus, sp. n.

Fig. 10.—*Polienus modestus.*

Body very pale buff-coloured; pronotum with long greyish-white hairs; head antennæ, and legs ochraceous; body beneath greyish; anterior wings pale buff-coloured, with obscure roseate suffusions on the costal and inner areas, the venation stramineous, and with a medial more or less distinct longitudinal series of fuscous speckles.

Exp. wings, ♂, 36; ♀, 34 millim.

Hab.—Transvaal; Pretoria (Distant).

I found this species on the wing from October to December.

Fam. LIMACODIDÆ.

Limacodidæ, Eucleidæ, Apodidæ, Cochliopodidæ, Cocliopodæ, Heterogeneidæ, of authors.

Newman, who used the term *Cochliopodidæ*, explained that it was derived from two Greek words signifying "snail" and "foot," because the caterpillar resembles a Snail, crawling along the surface of the leaf on which it feeds. The flat part of a Snail on which it crawls is called the "foot"; the feet of these caterpillars are retractile, so when one of them is turned on its back, the legs appear to be withdrawn into its stomach; but when again placed in its natural position, the feet are protruded, and take firm hold of the leaf." * It is for these characteristics that the larvæ are often known as "Slug-caterpillars." In the cocoon there is a lid prepared by the larva for the escape of the imago.

Bibliography—Little has been written on the Ethiopian Limacodidæ; the following may be mentioned:—

Wallengren, H. D. J. "Heterocer-Fjärilar Kafferlandet." (Kongl. Svensk. Vet.-Ak. Handl. Bd. v. No. 4, pp. 21–4 (1865).)—Cocliopodæ.

Druce, H. "Descriptions of some New Species of Lepidoptera Heterocera, mostly from Tropical Africa." (Proc. Zool. Soc. Lond. 1887, pp. 681–83.)

Distant, W. L. "On a Collection of Heterocera made in the Transvaal."—Limacodidæ. (Ann. Mag. Nat. Hist. (6) vol. xx. p. 204 (1897).)

Genus CŒNOBASIS.

Cœnobasis, Felder, Reise d. Novara, Lep. iv. pl. lxxxii. fig. 14 (1874).

A small South African genus.

Fig. 11.—Cocoon of *Cœnobasis amœna.*

1. Cœnobasis amœna. (Tab. VIII., fig. 14.)

Cœnobasis amœna, Felder, Reise d. Novara, Lep. iv. pl. lxxxii. fig. 14 (1874); Dist. Ann. Mag. Nat. Hist. (6) vol. xx. p. 204 (1897).

Hab.—Transvaal; Pretoria (Colls. Dist. and Pret. Mus.), Johannesburg (Ross), Lydenburg District (Zutrzenka). — Probably distributed throughout South-east Africa.

At Johannesburg the larva feeds on the black wattle, and Mr. Ross has sent me a pupa, which is here figured. The lid has disappeared from the cocoon, from which the integument of the chrysalis may be seen protruding. Miss Barrett, writing from the Transkei, describes these cocoons as "not easy to find until after the Moth has emerged, being streaked with greyish-green, like a

* 'British Moths,' p. 21.

bird's egg; afterwards they bleach white, and become very conspicuous. There are many empty cocoons to be seen." *

Genus PARASA.

Parasa, Moore, Cat. Lep. Mus. East Ind. Co. ii. p. 413 (1859); Lepid. Ceylon, ii. p. 196 (1883); Hamps. Fauna Brit. India, Moths, vol. i. p. 387 (1892).

Neæra, Herr.-Schäff. Aussereurop. Schmett. i. figs. 176, 177 (1854), *nom. præocc.*

A widely distributed genus, being found in North America, West and South Africa, Madagascar, British India, Burma, Java, China, and Japan.

2. **Parasa ætitis.** (Tab. VIII., fig. 15.)

Tæda ætitis, Wallengren, Wien. Ent. Mon. vii. p. 141 (1863); Bihang, Svensk. Akad. Handl. (2) Band v. No. 4, p. 23 (1865); Öfv. Vet.-Ak. Förh. xxxii. p. 96 (1876).

Limacodes argentifera, Westw. in Oates' 'Matabele Land,' p. 358 (1881).

Pantoctenia albipunctata, Druce, Proc. Zool. Soc. Lond. 1887, p. 682, pl. lv. fig. 2 (1888).

Parasa ætitis, Dist. Ann. Mag. Nat. Hist. (6) vol. xx. p. 204 (1897).

Hab.—Transvaal; Pretoria and Pienaars River (Distant).—Mashonaland, Caffraria, Natal.

I took this species on the wing at Pienaars River in November, and at Pretoria in December.

3. **Parasa latistriga.** (Tab. VIII., fig. 16.)

Neæra latistriga, Walker, Cat. Lepid. Brit. Mus. v. p. 1141, 5 (1855).

Parasa latistriga, Dist. Ann. Mag. Nat. Hist. (6) vol. xx. p. 204 (1897).

Hab.—Transvaal; Pretoria (Distant).

I captured a long series of specimens on dates commencing in October, and terminating at the end of January.

4. **Parasa johannes.** (Tab. VIII., fig. 17.)

Parasa johannes, Distant, Ann. Mag. Nat. Hist. (7) vol. i. p. 118 (1898).

Hab.—Transvaal; Johannesburg (Cregoe).

Genus APLUDA.

Apluda, Wallengren, Wien. Ent. Mon. vii. p. 140 (1863); Bihang, Svensk. Akad. Handl. (2) Band 5, No. 4, p. 22 (1865).

A small South African genus.

5. **Apluda invitabilis.** (Tab. VIII., fig. 18.)

Heterogenea invitabilis, Wallengren, Wien. Ent. Mon. 1860, p. 44.

Apluda invitabilis, Wallengren, Bihang. Svensk. Akad. Handl. (2) Band v. No. 4, p. 23 (1865); Dist. Ann. Mag. Nat. Hist. (6) vol. xx. p. 204 (1897).

Hab.—Transvaal; Pretoria (Coll. Dist.).—Caffraria.

6. **Apluda similis.** (Tab. VIII., fig. 19.)

Apluda similis, Distant, Ann. Mag. Nat. Hist. (6) vol. xx. p. 204 (1897).

Hab.—Transvaal; Pretoria (Colls. Dist. and Pret. Mus.), Waterberg District (Wilde).

* Ent. Month. Mag. 1903, p. 141.

Appendix to the Heterocerous Families previously enumerated.

As I have for the present terminated my description and enumeration of the Transvaal Moths, it is necessary to refer to a few species that have reached my hands since the publication of the previous part of this work.

Fam. SATURNIIDÆ (*ante*, p. 51).
Genus BUNÆA (*ante*, p. 57).

(After *B. tyrrhena*, *ante*, p. 58.)

24. **Bunæa epithyrena**, var. (Tab. VII., fig. 13.)

Bunæa epithyrena, Maasen & Weymer, Beitr. Schmett. v. figs. 86, 87 (1886); Sonth. Ess. Classif. Lépid. product. de Soie (3e fascic.), p. 37, pl. xviii. fig. 1 (1901).

Hab.—Transvaal; Shilouvane in Zoutpansberg (Junod; Pret. Mus. and Coll. Dist.).—Hitherto known from Zanzibar.

The varietal form here figured agrees with the figure of Sonthonnax in exhibiting the transverse fasciæ to the anterior wings above. From the figure of its original describers, Maasen and Weymer, it differs by the almost obsolete fuscous discal spots to the wings beneath.

25. **Bunæa patruelis**, sp. n. (Tab. VII., fig. 14.)

Male. Body pale tawny; pronotum reddish ochraceous, anterior margin, posterior lateral margins of pronotum and lateral margins of sternum creamy white; antennæ, disk of sternum, and legs fuscous; anterior wings fawn-coloured, the costal area reddish ochraceous, the outer marginal area dull greyish, a small talc-like spot at end of cell; posterior wings bright reddish ochraceous, the inner and outer marginal areas broadly fawn-coloured, greyish posteriorly, a somewhat large plumbageous ocellated discal spot, margined with black outwardly, and with a small central talc-like spot. Wings beneath pale greyish inclining to pale fawn-colour on the outer areas, both wings crossed near end of cells by a waved fuscous linear fascia; anterior wings with indications of a second discal fascia, margins of talc-like spot at end of cell and a subapical costal patch, fuscous.

Female. Only differing from male on the under surface of the posterior wings, where the talc-like spot is visible and surrounded with fuscous, and by the presence of a distinct fuscous spot near base of cell.

Exp. wings, ♂, 100 millim., ♀, 87 millim.

Hab.—Transvaal; Shilouvane (Junod; Pret. Mus. and Coll. Dist.).

Fam. SPHINGIDÆ (*ante*, p. 64).
Genus LOPHURON, to follow TEMNORA (*ante*, p. 66).

Lophuron, Boisduval in Delegorgue, Voy. Afr. Austr. ii. p. 594 (1847); Wallengr. Kongl. Vet.-Ak. Handl. (2) Bd. v. No. 4, p. 17 (1865).

29. **Lophuron magnificum.**

Lophuron magnificum Rothschild, Nov. Zool. i. p. 71, pl. v. fig. 7 (1894).
Odontosida magnificum, Rothsch. & Jord. Revis. Lepid. Fam. Sphingidæ, p. 587, n. 523 (1903).

Fig. 12.—*Lophuron magnificum.*

"Fore wings pale grey, with a triangular dark olive patch near the centre of the wings, and running from the costa almost the entire width of the wing; in the centre of this patch is a white dot. There are two indistinct zigzag lines of deep brown crossing the fore wings transversely near the base, and three oblong olive patches, more or less defined along the inner margin. Hind wings base brilliant yellow, remainder cinnabar-red, with a large grey patch at the anal angle crossed by three black bars. Under side: fore wings grey, basal half orange, and a large black blotch in cell, with a white spot in centre. Hind wings grey, with white dot in centre. Head grey, thorax greyish olive, with pale grey centre. Abdomen grey, with three dorsal longitudinal rows of indistinct olivaceous dots" (Rothsch.).

Hab.—Transvaal; Pietersburg (Cregoe).—Natal.—Cape Colony; Grahamstown.—Little Namaqualand.

In the Transkei Miss Barrett found this Moth about blossoming peach trees, and also at orange blossom.*

* Ent. Month. Mag. 1900, p. 141.

Horace Knight ad.nat.lith.

West, Newman chromo

Horace Knight ad.nat.lith

West, Newman chrom.

Horace Knight ad nat. lith. West, Newman chromo


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Horace Knight, ad. nat. lith.

West, Newman, chromo

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